PROCEEDINGS

OF THE

Society of Antiquaries of Scotland

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Society of Antiquaries of Scotland

SESSION
MCMXXXVI.–MCMXXXVII.

VOL. LXXI.

SIXTH SERIES.—VOL. XI.

Edinburgh
PRINTED FOR THE SOCIETY BY NEILL AND COMPANY LTD.
MCMXXXVII.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LAWS

AND

LIST OF FELLOWS

OF THE

SOCIETY OF ANTIQUARIES OF SCOTLAND

LAWS

OF THE

SOCIETY OF ANTIQUARIES OF SCOTLAND.

INSTITUTED NOVEMBER 1780 AND INCORPORATED BY ROYAL CHARTER 6TH MAY 1783.

(Revised and adopted November 30, 1901.)

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1. The purpose of the Society shall be the promotion of ARCHÆOLOGY, especially as connected with the investigation of the ANTIQUITIES AND HISTORY OF SCOTLAND.

2. The Society shall consist of Fellows, Honorary Fellows, Corresponding Members, and Lady Associates.

3. Candidates for admission as Fellows must sign the Form of Application prescribed by the Council, and must be proposed by a Fellow and seconded by two members of the Council. Admission shall be by ballot.

4. The Secretaries shall cause the names of the Candidates and of their Proposers to be inserted in the billet calling the Meeting at which they are to be balloted for. The Ballot may be taken for all the Candidates named in the billet at once; but if three or more black balls appear, the Chairman of the Meeting shall cause the Candidates to be balloted for singly. Any Candidate receiving less than two-thirds of the votes given shall not be admitted.

5. Honorary Fellows shall consist of persons eminent in Archæology, who must be recommended by the Council, and balloted for in the same way as Fellows; and they shall not be liable for any fees of admission or annual subscriptions. The number of Honorary Fellows shall not exceed twenty-five.

6. Corresponding Members must be recommended by the Council and balloted for in the same way as Fellows, and they shall not be liable for any fees of admission or annual subscriptions.

7. Ladies who have done valuable work in the field of Archæology may be admitted as Lady Associates. The number of Lady Associates shall not exceed twenty-five. They shall be proposed by the Council and balloted for in the same way as Fellows, and shall not be liable for any fees of admission or annual subscriptions.

8. Before the name of any person is added to the List of Fellows, such person shall pay to the funds of the Society Two Guineas as an entrance fee and One Guinea for the current year's subscription, or may compound for the entrance fee and all annual subscriptions by the payment of Twenty Guineas at the time of admission. Fellows may compound for future annual subscriptions by a single payment of Fifteen Guineas after having paid five annual subscriptions; or of Ten Guineas after having paid ten annual subscriptions.

9. The subscription of One Guinea shall become due on the 30th November in each year for the year then commencing; and if any Fellow who has not compounded shall fail to pay the subscription for three successive years, due application having been made for payment, the Treasurer shall report the same to the Council, by whose authority the name of the defaulter may be erased from the list of Fellows.

10. Every Fellow not being in arrears of the annual subscription shall be entitled to receive the printed Proceedings of the Society from the date of election.

11. None but Fellows shall vote or hold any office in the Society.

12. Subject to the Laws and to the control of the Society in General Meetings, the affairs of the Society shall be managed by a Council elected and appointed as hereinafter set forth. Five Members of the Council shall be a quorum.

13. The Office-Bearers of the Society shall consist of a President, three Vice-Presidents, two Secretaries for general purposes, two Secretaries for Foreign Correspondence, a Treasurer, two Curators of the Museum, a Curator of Coins, and a Librarian. The President shall be elected for a period of five years, and the Vice-Presidents for a period of three years.

One of the Vice-Presidents shall retire annually by rotation and shall not again be eligible for the same office until after the lapse of one year. All the other Office-Bearers shall be elected for one year and shall be eligible for re-election.

14. In accordance with the agreement subsisting between the Society and the Government, the Board of Manufactures (now the Board of Trustees) shall be represented on the Council by two of its Members (being Fellows of the Society) elected annually by the Society. The Treasury shall be represented on the Council by the King's and Lord Treasurer's Remembrancer (being a Fellow of the Society).

15. The Council shall consist of the Office-Bearers, the three representative Members above specified, and nine Fellows, elected by the Society.

16. Three of the nine elected Members of Council shall retire annually by rotation, and shall not again be eligible till after the lapse of one year. Vacancies among the elected Members of Council and Office-Bearers occurring by completion of term of office, by retirement on rotation, by resignation, by death or otherwise, shall be filled by election at the Annual General Meeting. The election shall be by Ballot, upon a list issued by the Council for that purpose to the Fellows at least fourteen days before the Meeting.

17. The Council may appoint committees or individuals to take charge of particular departments of the Society's business.

18. The Annual General Meeting of the Society shall take place on St Andrew's Day, the 30th of November, or on the following day if the 30th be a Sunday.

19. The Council shall have power to call Extraordinary General Meetings when they see cause.

20. The Ordinary Meetings of the Society shall be held on the second Monday of each month, from December to May inclusive.

21. Unless special arrangements to the contrary have been made, copyright of *The Proceedings* and of all papers printed therein, as well as of all illustrations, shall belong to the Society. This provision shall not apply to illustrations made from blocks borrowed from outside sources.

22. Every proposal for altering the Laws must be made through the Council; and the Secretaries, on instructions from the Council, shall cause intimation thereof to be made to all the Fellows at least one month before the General Meeting at which it is to be determined on.

Form of Special Bequest.

I, A. B., do hereby leave and bequeath to the Society of Antiquaries of Scotland incorporated by Royal Charter, my collection of and I direct that the same shall be delivered to the said Society on the receipt of the Secretary or Treasurer thereof.

General Form of Bequest.

I, A. B., do hereby leave and bequeath to the Society of Antiquaries of Scotland incorporated by Royal Charter, the sum of £ sterling [*to be used for the general purposes of the Society*] [or, *to be used for the special purpose or object of*], and I direct that the said sum may be paid to the said Society on the receipt of the Treasurer for the time being.

LIST OF THE FELLOWS

OF THE

SOCIETY OF ANTIQUARIES OF SCOTLAND,

NOVEMBER 30, 1937.

PATRON:

HIS MAJESTY THE KING.

1932.* ADAM, DAVID RANKINE, 76 Stewarton Drive, Cambuslang.

1931. AGNEW, Rev. HUGH M., M.A., Minister of St George's Presbyterian Church, 20 St James Road, East London, South Africa.

1917. AGNEW, STAIR CARNEGIE, M.A., LL.B., Barrister-at-Law, 60 Elm Park Gardens, London, S.W. 10.

1892. AILSA, The Most Hon. The Marquess of, Culzean Castle, Maybole.

1935. AINSWORTH, JOHN FRANCIS, B.A., 116 Artillery Mansions, Victoria Street, London, S.W. 1.

1932. AINSWORTH, RICHARD, Author and Lecturer, Longmead, 54 Lauderdale Avenue, Cleveleys, near Blackpool.

1929. ALEXANDER, W. M., Journalist, Hillview Road, Cults, Aberdeenshire.

1936. ALLAN, E., F.R.C.S.Ed., West View, Rose Avenue, Elgin.

1930. ALLAN, Mrs H. M., 10 Ainslie Place, Edinburgh, 3.

1937. ALLAN, JOHN, M.A., F.S.A., Keeper of Coins, The British Museum, London, W.C. 1.

1926. ALLAN, WILLIAM, M.B.E., Rhindmuir House, Baillieston.

1929. ANCKORN, WILFRED LORRAINE, Three-Corner Mead, Dunton Green, Kent.

1925. ANDERSON, ALEXANDER HUTTON, M.A., Donaldson's Hospital, Edinburgh, 12.

1922.* ANDERSON, ARTHUR R., 6 Bowmont Terrace, Glasgow, W. 2.

1897. ANDERSON, Major JOHN HAMILTON, 2nd East Lancashire Regiment, c/o Messrs Cox & Co., 16 Charing Cross, London, S.W. 1.

1934. ANDERSON, Rev. JOHN, Sconser, The Manse, Portnahaven, Islay.

1902.* ANDERSON, Major ROBERT DOUGLAS, c/o The Manager, Lloyd's Bank, Paignton, Devon.

1920. ANDERSON, Rev. ROBERT S. G., B.D., The Manse, Castle Kennedy, Wigtownshire.

1936. ANDREW, Rev. HARRY, Minister of Gilfillan Memorial Church, Gilfillan Manse, Ancrum Road, Dundee.

1913. ANGUS, Miss MARY, Immeriach, 354 Blackness Road, Dundee.

1921. ANGUS, WILLIAM, Keeper of the Registers and Records of Scotland, H.M. General Register House, Edinburgh, 2.

1926.* ANGUS-BUTTERWORTH, LIONEL MILNER, F.R.G.S., F.C.I.S., A.M.I.Mech.E., Vice-President of the Ancient Monuments Society, Ashton New Hall, The Old Village, Ashton-on-Mersey, Cheshire.

1910. ANNAN, J. CRAIG, Glenbank, Lenzie.

1897. ANSTRUTHER-GRAY, WILLIAM, Lieut.-Col., Royal Horse Guards, Kilmany, Fife.

1931. ARBUCKLE, WILLIAM F., M.A. (Edin. & Oxon.), H.M.I.S., 1 Murrayfield Gardens, Edinburgh, 12.

1931. ARCHER, GILBERT, St Ola, Park Road, Leith, Edinburgh, 6.

1918.* ARGYLL, His Grace The Duke of, Inveraray Castle.

1910. ARMSTRONG, A. LESLIE, M.C., F.S.I., F.S.A., 27 Victoria Road, Stockton Heath, Warrington.

An asterisk (*) denotes Life Members who have compounded for their Annual Contributions.

1921. Arnott, James Alexander, F.R.I.B.A., 64 Frederick Street, Edinburgh, 2.

1910. Asher, John, 13 Pitcullen Crescent, Perth.

1924. Ashworth, Mrs, Hillbank, Grange Loan, Edinburgh, 9.

1931. Askew, Gilbert H., Greenriggs, Farnley, Corbridge, Northumberland.

1935. Atherton, Rev. William Bernard, B.A., late R.N., Coberley Rectory, Cheltenham, Glos.

1917.*Atholl, His Grace The Duke of, K.T., C.B., M.V.O., D.S.O., LL.D., Blair Castle, Blair Atholl.

1915. Baillet de Latour, The Countess Vincent, The Beehive, Uiginish, Dunvegan, Skye.

1932. Baillie, James M'Kenzie, 17 Alpin Road, Dundee.

1933. Bain, F. W., M.C., 29 Palace Court, London, W. 2.

1922. Bain, Rev. John, Minister of St Paul's Church, 13 Dryden Place, Newington, Edinburgh, 9.

1936. Baird, Gerald Fortay, F.L.A.S., Chartered Land Agent, Derwent, Helensburgh.

1925. Baird, James, 81 Meadowpark Street, Dennistoun, Glasgow, E. 1.

1922. Baird, Sir William Macdonald, J.P., F.F.S., 7 St Colme Street, Edinburgh, 3.

1918. Balfour, Lieut.-Col. Frederick Robert Stephen, M.A., D.L., Dawyck, Stobo, Tweeddale.

1933. Balfour, The Hon. James Moncreiff, O.B.E., 44 Gloucester Square, London, W. 2.

1926. Balfour-Melville, Evan W. M., M.A., Lecturer in History in the University of Edinburgh, 2 South Learmonth Gardens, Edinburgh, 4.

1915.*Ballantine, James, 24 Hill Street, Edinburgh, 2.

1936. Ballantine, William Archibald, P.A.S.I., Chartered Surveyor, 2 Balmoral Place, Stirling.

1933. Ballingall, George W., Dalgynch, 20 Midmar Gardens, Edinburgh, 10.

1921. Banerjea, Rasbihari, M.B., F.I.A.Sc. (no address).

1926. Bannerman, John, St Margarets, Elgin.

1928. Bannerman, Captain Ronald R. Bruce, M.C., 19 Dornton Road, South Croydon.

1931. Barclay, Rev. William, M.A., Minister of Shawlands Old Church, 47 Monreith Road, Newlands, Glasgow, S.3.

1936. Barnetson, James, J.P., Georgemas, Halkirk, Caithness.

1897.*Barnett, Rev. T. Ratcliffe, Ph.D., 7 Corrennie Gardens, Edinburgh, 10.

1935. Barr, John M., Writer, 120 St Vincent Street, Glasgow.

1922. Barrie, John Alexander, 11 Lady Road, Edinburgh, 9.

1910. Barron, Rev. Douglas Gordon, O.B.E., V.D., D.D., Ardchoille, Aberfoyle.

1923. Barron, Evan MacLeod, LL.D., Proprietor and Editor of *The Inverness Courier*, Oaklands, Inverness.

1922. Barton, Dr Samuel Saxon, O.B.E., F.R.F.P.S. (Glas.), L.R.C.P. (Edin.), 61 Parkfield Road, Sefton Park, Liverpool, 17.

1931. Bathgate, Thomas D., Gersa Schoolhouse, Watten, Caithness.

1927. Battersby, James, F.R.C.S.Eng., etc., Edenkerry, Helensburgh.

1930. Baxter, William, Public Works Contractor, Eskdale, 153 High Street, Tranent.

1884.*Beaton, Major Angus J., C.M.G., V.D., Trouville, Evesham Road, Pittville, Cheltenham.

1931. Beattie, David J., Sculptor, Kenilworth, Talbot Road, Carlisle.

1935. Bell, Miss Elizabeth Turner, J.P., F.E.I.S., 4 Rillbank Crescent, Edinburgh, 9.

1929.*Bell, Rev. William Napier, M.A., 37 Oakfield Avenue, Glasgow, W. 2.

1925. Bennet, Rev. Alexander Lyon, B.A., The Manse, Chryston.

1924. Bentinck, Rev. Charles D., D.D., 29 Nile Grove, Edinburgh, 10.

1928. Benton, Miss Sylvia, M.A. (Camb.), B.Litt., 6 Winchester Road, Oxford.

1929. Bertram, Donald, Manager, Orkney Steam Navigation Co., Ltd., 20 East Road, Kirkwall.

1925. Beveridge, James, M.A., Wellbank, Linlithgow.

1930. Beveridge, Rev. John, M.B.E., B.D., Broomhouse Road, Corstorphine, Edinburgh, 12.

1927. Bickersteth, Miss Marguerite Elizabeth, Ph.D., 32 Stafford Street, Edinburgh, 3.

1932.*Birley, Eric, M.A., F.S.A., Chesterholm, Bardon Mill, Northumberland.

1909. Bishop, Andrew Henderson, Thornton Hall, Lanarkshire.

1922. Bishop, Frederick, Ruthven House, Colinton.

1924. Bisset, Alexander Macdonald, Bertha Cottage, Bathgate.

1933. Blackater, John C., Jr., F.R.G.S., F.Z.S.(Scot.), Royal Exchange (Box 1), Queen Street, Glasgow, C.1.

1932. Blackwood, Robert, J.P., 9 Oxford Street, Dundee.

1926. Blair, George, 8 Crown Road North, Glasgow, W. 2.

1929. Blair, Robert K., W.S., Glebe Cottage, Gullane, East Lothian.

1909. Blundell, Rev. Odo, O.S.B., 7 Holly Road, Fairfield, Liverpool.

1917. Bonar, John James, Eldinbrae, Lasswade.

1928. Bonnar, William, 51 Braid Avenue, Edinburgh, 10.

1928. Borenius, Tancred, Ph.D., D.Lit., Professor of the History of Art in the University of London, 28 Kensington Gate, Kensington, London, W.8.

1932. Bosworth, William George, Librarian and Curator, Public Library, Museum, and Public Hall, Altrincham.

1936. Bowie, J. McLintock, F.R.I.B.A., Byrlaw, Dalbeattie Road, Dumfries.

1928. Brook, George Bernard, F.I.C., M.Inst.M.M., F.C.S., F.R.S.E., The Research Laboratories, Kinlochleven.

1908. Brook, William, 87 George Street, Edinburgh, 2.

1928. Brough, William, 42 Dundas Street, Stromness, Orkney.

1906.*Brown, Adam, Netherby, Galashiels.

1932. Brown, Cecil Jermyn, M.A., Buccleuch House, Melrose.

1924. Brown, Charles Herbert, K.C., Sheriff of the Lothians and Peebles, 11 Grosvenor Crescent, Edinburgh, 12.

1921.*Brown, Donald, 80 Grosvenor Street, West Hartlepool.

1933. Brown, Sheriff George, Berstane House, St Ola, Orkney.

1921. Brown, Thomas, A.R.I.B.A., Head of the Building Department, Heriot-Watt College, Edinburgh, 1.

1932. Brownlee, David Angus, Brownlee Cottage, Colston, Bishopbriggs.

1922.*Brunwin, George Eustace, Haverings, Rayne, Braintree, Essex.

1936.*Bryce, James Hutchison, Searcher of Records, 22 West Mayfield, Edinburgh, 9.

1902. Bryce, Emeritus Professor Thomas H., M.A., M.D., LL.D., F.R.S., The Loaning, Peebles,—*Vice-President.*

1922.*Bryden, Robert Lockhart, B.L., 12 Selborne Road, Jordanhill, Glasgow.

1935. Brydon, R. S., M.A.(Hons.), Ph.D., Craig Araig, Pitlochry, Perthshire.

1933. Buchan, James, Editor, *Dundee Telegraph*, 65 Blackness Avenue, Dundee.

1931. Buchanan, Alexander Grahame, M.B., Ch.B., 9 Clarence Drive, Hyndland, Glasgow.

1927. Bulloch, John Malcolm, M.A., LL.D., 45 Doughty Street, London, W.C. 1.

1887.*Burgess, Peter, View Ville, Drumnadrochit, Inverness.

1925. Burnet, J. R. Wardlaw, K.C., Sheriff of Fife, 60 Northumberland Street, Edinburgh, 3.

1892. Burnett, Rev. J. B., B.D., D.D., The Manse, Fetteresso, Stonehaven.

1911. Burnett, Rev. William, B.D., 8 Bellevue Terrace, Edinburgh, 7.

1934. Burns, John C., B.A., Assoc.M.Inst.C.E., 138 Newhaven Road, Edinburgh, 6.

1925.*Burns, John George, Sheriff-Substitute of Dunbartonshire, Sheriff's Chambers, County Buildings, Dumbarton.

1887. Burns, Rev. Thomas, C.B.E., D.D., F.R.S.E., Croston Lodge, 3A Chalmers Crescent, Edinburgh, 9.

1933. Burns, Thomas Pilkington, Mortimer Lodge, Mortimer, Berkshire.

1925. Burnside, Rev. John W., M.A., 505 Strathmartine Road, Dundee.

1928. Burrell, Sir William, Hutton Castle, Berwick-upon-Tweed.

1927. Bushnell, George H., University Librarian, St Andrews, St Johns, St Andrews.

1901.*Bute, The Most Hon. The Marquess of, K.T., Mount Stuart, Rothesay.

1936. Cable, James Ewen, M.B., Ch.B., D.P.H., 53 East High Street, Forfar.

1931. Calder, Charles C., Bernera, Dalvey, Forres, Morayshire.

1921.*Calder, Charles S. T., A.R.I.A.S., Assistant Architect, Royal Commission on Ancient Monuments (Scot.), 27 York Place, Edinburgh, 1.

1930. Calder, William M., M.A., LL.D., F.B.A., Professor of Greek, University of Edinburgh; Editor of *Classical Review*; 58 St Alban's Road, Edinburgh, 9,—*Secretary for Foreign Correspondence.*

1919.*Callander, Alexander D., Lellopitiya, Ratnapura, Ceylon.

1898.*Callander, J. Graham, LL.D., 11 Osborne Terrace, Edinburgh, 12,—*Director of Museum.*

1929. Callander, William A., Writer, Rodona, Kelburn Avenue, Dumbreck, Glasgow.

1910. Cameron, Sir D. Y., R.A., R.S.A., R.S.W., LL.D., Dun Eaglais, Kippen.

1922. Cameron, Colonel Donald C., C.B.E., M.A., R.A.S.C., Truxford, Thursley Road, Elstead, Surrey.

1936.*Cameron, Rev. John A., M.A., B.D., Hon.C.F., The Manse, Legerwood, Earlston, Berwickshire.

1930. Cameron, Rev. John Kirkland, The Manse, Auchterhouse, near Dundee.

1931. Cameron, Neil, Mayfield, Thornhill Park, Sunderland.

1905. Cameron-Swan, Captain Donald, F.R.A.S., Strathmore, Kalk Bay, South Africa.

1930. Campbell, Charles, M.B.E., 46 Rannoch Drive, Bearsden, Dunbartonshire.

1929. Campbell, Hugh Rankin, Ardfern, 1 Woodburn Road, Newlands, Glasgow.

1930. Campbell, James A., "Glenbank," Dunblane.

1925.*Campbell, John Douglas-Boswell, 25 Ainslie Place, Edinburgh, 3.

1934. Campbell, Rev. John McCormack, Tollcross Park Manse, 94 Drumover Drive, Glasgow, E. 1.

1922. Campbell, Sheriff John Macmaster, Rosemount, Campbeltown, Argyll.

1931. Cant, Rev. Alan, B.D., B.Sc., Manse of Creich, Cupar-Fife.

1901. Carfrae, George, 77 George Street, Edinburgh, 2.

1931. Cargill, Sir John T., Bart., D.L., LL.D., 10 Lowther Terrace, Glasgow.

1906. Carmichael, Evelyn G. M., O.B.E., Barrister-at-Law, Meretown House, Newport, Salop.

1923. Carnegy-Arbuthnott, Lieut.-Col., Balnamoon, Brechin.

1922. Carruthers, Arthur Stanley, A.C.A., Chartlands, Purley Oaks Road, Sanderstead, Surrey.

1931. Carswell, Ronald, L.R.I.B.A., 17 Salisbury Road, Edinburgh, 9.

1932. Carter, Hartley Sidney, M.D., D.P.H., Ch.B., Public Health Laboratory, 20 Cochrane Street, Glasgow, C. 1.

1937. Cartwright, John, Architect, Ancient Monuments Department, H.M. Office of Works, 40 Carrick Knowe Hill, Edinburgh, 12.

1933.*Cassillis, The Rt. Hon. The Countess of, 6 Carlton Terrace, Edinburgh, 7.

1896. Caw, Sir James L., LL.D., 14 Cluny Place, Edinburgh, 10.

1929. Chalmers, Francis, W.S., 20 Corrennie Gardens, Edinburgh, 10.

1919. Chalmers, Rev. Henry Reid, 50 Grove Road, West Ferry, Dundee, Angus.

1928. Chamney, William, J.P., 15 Elgin Road, Dublin.

1935. Chaplin, Mrs Dorothea, Sesame Club, 49 Grosvenor Street, London, W. 1.

1934. Chapman, Allan, M.A., M.P., Torsonce, Stow, Midlothian.

1927. Childe, Professor V. Gordon, D.Litt., D.Sc., F.S.A., Professor of Archæology, The University, Edinburgh, 8,—*Secretary for Foreign Correspondence.*

1932. Christie, Bailie Douglas Morrison, J.P., "Namur," 8 Dalkeith Road, Dundee.

1901. Christie, Miss, Cowden Castle, Dollar.

1910. Christison, James, J.P., F.L.A., Librarian, Public Library, Montrose.

1902. Clark, Archibald Brown, M.A., Emeritus Professor of Political Economy, University of Manitoba, 23 Riselaw Crescent, Edinburgh, 10.

1936. Clark, Arthur, 17 Union Avenue, East London, South Africa.

1936. Clark, Mrs Jane Inglis, Beaumont Lodge, 29 Greenhill Gardens, Edinburgh, 10.

1921. Clark, William Fordyce, Hillsgarth, Balta Sound, Shetland Isles.

1908. Clay, Alexander Thomson, W.S., 18 South Learmonth Gardens, Edinburgh, 4.

1929. Clifford, Mrs Elsie Margaret, Chandlers, Witcombe, Glos.

1916. Clouston, Eric Crosby Townsend, M.R.C.S.(Eng.), L.R.C.P.(Lond.), Priory Lodge, Tonbridge, Kent.

1917. Clouston, J. Storer, O.B.E., Smoogro House, Orphir, Orkney.

1922.*Clouston, Ronald Gillan, L.R.C.P. (Edin.), L.R.C.S. (Edin.), 10 Carrington Street, Glasgow, C. 4.

1921.*Clouston, Thomas Harold, O.B.E., Langskaill, 5 Atherton Drive, Wimbledon Common, London, S.W. 19.

1929. Clow, Andrew, Solicitor, Alma Villa, Aberfeldy.

1936. Clyde, Rev. I. Henry, B.A., Ross Memorial Manse, Dalmuir, Glasgow.

1905. Clyde, The Right Hon. Lord, LL.D., Briglands, Rumbling Bridge, Kinross-shire.

1901.*Cochran-Patrick, Lady, Woodside, Beith.

1898.*Cochran-Patrick, Sir Neil J. Kennedy, K.B.E., J.P., D.L., of Woodside, Advocate, Ladyland, Beith.

1919.*Cockburn, Captain Archibald Frederick, R.E. (T.F.), 32 St Andrew Square, Edinburgh, 2.

1929. Cockburn, Rev. J. Hutchison, D.D., The Cathedral Manse, Dunblane.

1935. Cocks, William A., The Lilac Cottage, Barmoor, Ryton-on-Tyne, Co. Durham.

1936. Coldstream, G. E. R., W.S., 2 Walker Street, Edinburgh, 3.

1920.*Collingwood, Professor R. G., M.A., F.S.A., Pembroke College, Oxford.

1929. Collum, Miss V. C. C., Withyfold, Wonham Way, Peaslake, Guildford.

1936. Colquhoun, Sir Iain, of Luss, Bart., K.T., D.S.O., LL.D., Rossdhu, Luss, Dunbartonshire.

1924. Colt, H. Dunscombe, c/o Farmer's Loan and Trust Co., 15 Cockspur Street, London, S.W. 1.

1921.*Colville, Captain Norman R., M.C., Penheale Manor, Egloskerry, Cornwall.

1909. Comrie, John D., M.A., B.Sc., M.D., F.R.C.P.E., Lecturer on the History of Medicine, University of Edinburgh, 25 Manor Place, Edinburgh, 3.

1931. Conacher, Hugh Morison, Assistant Secretary, Department of Agriculture for Scotland, 6 Tweed Green, Peebles.

1932. Connell, William, Belmont, London Road, Bracknell, Berks.

1933. Connor, Rev. John M., D.S.O., M.A., C.F.ret., 43 Ormonde Avenue, Cathcart.

1918. Cook, Davidson, Highfield, Huddersfield Road, Barnsley, Yorkshire.

1924. Cook, John, W.S., 61 Castle Street, Edinburgh, 2.

1920. Cornelius, Rev. William J. J., D.Litt., D.C.L., D.D., M.A., B.D., D.Sc., A.K.C., F.R.Hist.S., C.F., etc., The Vicarage, Peacehaven, Sussex.

1913.*Corrie, John M., Archæologist to the Royal Commission on Ancient and Historical Monuments of Scotland, 27 York Place, Edinburgh, 1.

1920.*Corsar, Kenneth Charles, of Rosely, Rubislaw, 75 Braid Avenue, Edinburgh, 10.

1927. Coupar, Rev. Robert, B.D., D.D., The Manse, Linlithgow.

1918. Couper, Rev. W. J., M.A., D.D., 43 Netherpark Avenue, Glasgow, S. 4.

1935. Courtney-Latimer, Miss Marjorie Eileen, Curator, East London Museum, 8 Lake St Vincent, P.O., Cambridge, South Africa.

1931. Cowe, William, Tweedville, Thorburn Road, Colinton, Edinburgh, 13.

1929. Cowie, Alexander M., M.B., C.M., Glenrinnes, Dufftown, Banffshire.

1929. Cowie, Morton J. H., A.R.I.B.A., "Durrisdeer," St John's Road, Corstorphine, Edinburgh, 12.

1929. Cowles, Frederick I., F.R.S.L., F.R.S.A., Librarian, Swinton and Pendlebury Public Libraries, Lancs.

1893.*Cox, Alfred W., Glendoick, Glencarse, Perthshire.

1901.*Cox, Douglas H. (no address).

1935. Craig, John, M.B., Ch.B., M.R.C.P.E., 5 Albyn Terrace, Aberdeen.

1932. Craig-Brown, Clive, Comely Bank, Selkirk.

1925. Craig-Brown, Brigadier-General E., D.S.O., Cross Roads, Currie, Midlothian.

1928. Craigie, John, Master Mariner, 4 Gill Pier, Westray, Orkney.

1927. Cranstoun, Colonel C. J. Edmondstoune, D.S.O., Corehouse, Lanark.

1936. Crawford, Henry James, B.A. (Lond.), 38a Netherhall Gardens, Hampstead, London, N.W.3.

1922. Crawford, James, 129 Fotheringay Road, Maxwell Park, Glasgow.

1901.*Crawford, The Right Hon. The Earl of, K.T., LL.D., Balcarres, Colinsburgh, Fife.

1931. Crichton, George, 6 Duncan Street, Edinburgh, 9.

1932. Crichton, Rev. Thomas Smith, M.A., 182 Whitehill Street, Dennistoun, Glasgow, E. 1.

1925.*Crichton-Stuart, The Lord Colum, M.P., 22 Mansfield Street, London, W. 1.

1919. Crockett, Thomas, M.A., D.Litt., 15 Langside Crescent, Southgate, London, N. 14.

1932. Crooks, E. E., F.C.I.I., Dundurn, Whitecraigs, Renfrewshire.

1932. Crooks, William M., J.P., Ardmere, Durham Street, Monifieth, Angus.

1937. Crookshank, Colonel Chichester de Windt, D.L., J.P., F.S.A., Johnstounburn, Humbie, East Lothian.

1932. Crosgrove, Rev. J. Pringle, M.A., Minister of St Colmac's and St Ninian's, The Manse, 32 Marine Place, Rothesay, Bute.

1925.*Cross, A. Robertson, M.C., B.A., LL.B., 11 Kirklee Terrace, Glasgow, W. 2.

1886. Cross, Robert, Gogar Park, Corstorphine, Edinburgh, 12.

1937. Cruden, Stewart H., 93 Baronscourt Terrace, Edinburgh, 8.

1924. Cruickshank, James, Westwood, Bucksburn, Aberdeenshire.

1924. Cullen, Alexander, F.R.I.B.A., F.S.I., 92 Cadzow Street, Hamilton.

1922. Cullen, William Johnston, 7 Howard Street, Edinburgh, 4.

1932. Cumming, Alexander, B.A., M.B., Ch.B., F.R.C.S.Edin., 193 Dominion Road, S. 2, Auckland, New Zealand.

1907. Cumming, Alexander D., Headmaster, Public School, Callander.

1919. Cumming, Alexander S., M.D., 18 Ainslie Place, Edinburgh, 3.

1927. Cumming, Victor James, 8 Grosvenor Terrace, Glasgow, W. 2.

1934. Cunningham, John Richard, I.C.S. (Retired), Askomil End, Campbeltown, Argyll.

1893. Cunnington, Captain B. Howard, 33 Long Street, Devizes, Wiltshire.

1922. Cunynghame, Edwin Blair, Broomfield, Moniaive, Dumfriesshire.

1893.*Curle, Alexander O., C.V.O., LL.D., F.S.A., Ormsacre, Barnton Avenue, Davidson's Mains, Edinburgh, 4,—*Librarian.*

1933. Curle, Alexander Tancred, M.B.E., Sumbawanga, Kigoma, Tanganyika Territory.

1889.*Curle, James, LL.D., F.S.A., St Cuthbert's, Melrose,—*Curator of Museum.*

1879.*Cursiter, Major James Walls, The Manse, Thornhill, Stirling.

1936. Cuthbertson, William F., Librarian, The Public Library, Hawick. "Fairylea," 8 Wilton Hill Terrace, Hawick.

1935.*Dakers, Colin Hugh, M.C., Malayan Civil Service, Chinese Protectorate, Kuala Lumpur, F.M.S.

1931. Dalgetty, Arthur Burness, M.D., Lossiehall, Liff, Angus.

1924. Dalgleish, Rev. George W., M.A., The South Manse, Culsalmond, Insch, Aberdeenshire.

1883. Dalrymple, The Hon. Sir Hew H., K.C.V.O., Hon. R.S.A., 24 Regent Terrace, Edinburgh, 7.

1920. Davidson, Alfred Robert, Invernahaven, Abernethy, Perthshire.

1924. Davidson, George, 8 Thistle Street, Aberdeen.

1925. Davidson, George M., Architect and Surveyor, 16 King Street, Stirling.

1924. Davidson, Hugh, Braedale, Lanark.

1920. Davidson, James, Treasurer, The Carnegie Trust for the Universities of Scotland, 59 Morningside Park, Edinburgh, 10.

1930. Davidson, Major James Milne, I.S.C., Lynwood, Ashtead, Surrey.

1932. Davidson, J. M., O.B.E., F.C.I.S., 2 Lochview Terrace, Gartcosh, Glasgow.

1936. Davidson, William T., 36 Woodstock Road, Aberdeen.

1925.*Dawson, A. Bashall, The Vache, Chalfont St Giles, Bucks.

1927.*Dawson, Warren R., F.R.S.E., F.S.A., Simpson House, Simpson, Bletchley, Bucks.

1929. De Blogue, Oswald, Ex-Archdeacon, Ex-R.N.S.C.F., The Rectory, Bishopstoke, Hants.

1922. Deas, George Brown, Architect and Civil Engineer, Lossiebank, Whytehouse Avenue, Kirkcaldy.

1923.*Dickson, Arthur Hope Drummond (no address).

1934. Dickson, Douglas Stanley, LL.B., 8 Clarence Drive, Hyndland, Glasgow.

1923. Dickson, Walter, Lynedoch House, Elcho Terrace, Portobello.

1895. Dickson, William K., LL.D., Advocate, 8 Gloucester Place, Edinburgh, 3.

1919. Dinwoodie, John, Deira, Crieff.

1910. Dixon, Ronald Audley Martineau, of Thearne, F.R.S.E., F.G.S., F.R.G.S., Thearne Hall, near Beverley, Yorkshire.

1923. Dobbie, Sir Joseph, 42 Melville Street, Edinburgh, 3.

1925. Dobbie, Lady, 42 Melville Street, Edinburgh, 3.

1931. Dobie, Marryat R., Keeper of Manuscripts, National Library of Scotland, 23 Cargil Terrace, Edinburgh, 5.

1931. Doig, Major William Howie, C.E., Gordon Street, Elgin.

1919.*Donald, Alexander Graham, M.A., F.F.A., 18 Carlton Terrace, Edinburgh, 7.

1930. Donald, John, 4 Nelson Street W., Greenock.

1910. Donn, Robert, 3 Garry Road, Mount Eden, Auckland, S.I., New Zealand.

1913. Douglas, Loudon M., F.R.S.E., Newpark, Mid Calder, Midlothian.

1927. Douglas, Miss Muriel M. O., M.A., Herons Gate, 40 Eastbury Road, Watford.

1927. Douglas, Percival Howard, Dip. Arch. Abdn., A.R.I.B.A., Herons Gate, 40 Eastbury Road, Watford.

1924. Douglas, Major Robert E., 15 Merchiston Avenue, Edinburgh, 10.

1927. Dow, J. Gordon, Solicitor and Joint Town Clerk, Millburn House, Crail, Fife.

1928. Dowsett, James H. H. MacGregor, Box 90, Post Office, Rabaul, Territory of New Guinea.

1929. Drummond, Mrs Andrew L., Eadie Church Manse, Alva, Stirlingshire.

1895.*Drummond-Moray, Capt. W. H., of Abercairney, Crieff.

1935. Duff, J., Civil Servant, Record Office, H.M. General Register House, Edinburgh, 2.

1930. Duff-Dunbar, Mrs Kenneth J., Hempriggs House, Wick.

1902. Duff-Dunbar, Mrs L., of Ackergill, Ackergill Tower, Wick, Caithness.

1936. Duffus, James Coutts, younger, F.R.H.S., Claverhouse, near Dundee, Angus.

1930.*Dumfries, The Right Hon. The Earl of, 17 Queen Anne's Gate, London, S.W.

1937. Duncan, Lieut.-Colonel Alan M., T.D., 33 Fotheringay Road, Glasgow, S. 1.

1920.*Duncan, Alexander MacLauchlan, A.R.I.B.A., Chinese Maritime Customs, Shanghai, China.

1909. Duncan, Rev. David, North Esk Manse, Musselburgh.

1924. Duncan, George, Advocate, 60 Hamilton Place, Aberdeen.

1934. Duncan, James, Conservator, Anthropological Museum, Marischal College, Aberdeen, 13 Northfield Place, Aberdeen.

1930. Duncan, John J., 118 Greenbank Road, Edinburgh, 10.

1932. Duncan, Robert, M.A., 294 Strathmartine Road, Dundee.

1921. Dundas, R. H., M.A., Christ Church, Oxford.

1933. Dunlap, Maurice P., American Consul, c/o American Consulate, Bergen, Norway.

1923. Dunlop, Miss, of Shieldhill, Biggar.

1923. Dunlop, Rev. William, M.A., St David's Manse, Buckhaven, Fife.

1927. Durand, Captain Philippe, Curator of the People's Palace Museum, Glasgow Green, Glasgow, S.E., 88 Holmlea Road, Cathcart, Glasgow.

1922. Dwelly, Edward, F.G.S., Poste Restante, Callander, Perthshire.

1924. Eades, George E., M.A., L.C.P., 29 Eversley Road, London, S.E. 19.

1927. Easterbrook, Arthur Blake, Balnagowan, Murrayfield Drive, Edinburgh, 12.

1913. Edgar, Rev. William, B.A., B.D., Ph.D., Kinning Park Manse, 10 Maxwell Drive, Pollokshields, Glasgow, S. 1.

1909. Edington, Colonel George Henry, T.D., D.L., M.D., D.Sc., F.F.P.S., 20 Woodside Place, Glasgow, C. 3.

1921. Edwards, Arthur J. H., Assistant Keeper, National Museum of Antiquities, 52 Strathearn Road, Edinburgh, 10.

1904. Eeles, Francis Carolus, F.R.Hist.S., 43 Millbank, London, S.W. 1.

1929. Egerton, Major-General Granville G. A., C.B., 7 Inverleith Place, Edinburgh, 4.

1923.*Elphinstone, The Right Hon. Lord, K.T., LL.D., Carberry Tower, Musselburgh.

1932. Ewen, John Taylor, O.B.E., B.Sc., F.R.S.E., Pitscandly, Forfar.

1930. Ewing, W. Turner, D.S.O., 18 Lennox Street, Edinburgh, 4.

1926. Fairbairn, Archibald, Weliwood, Muirkirk, Ayrshire.

1936. Fairhurst, Horace, M.A., MacBrayne Hall, 11 Park Circus Place, Glasgow, C. 3.

1923. Fairlie, Reginald F., R.S.A., Architect, 7 Ainslie Place, Edinburgh, 3.

1912. Fairweather, Sir Wallace, D.L., J.P., Mearns Castle, Renfrewshire.

1921.*Farmer, Henry George, M.A., Ph.D., M.R.A.S., Dár As-Salám, Stirling Drive, Bearsden.

1936. Farrant, R. D., His Honour The Deemster, 4 Albert Terrace, Douglas, Isle of Man.

1935. Fenton, William, 5 Meethill, Alyth, Perthshire.

1926. Ferguson, Frederic Sutherland, The Homestead, Avenue Road, Southgate, London, N. 14.

1928. Ferguson, Frederick Anerley, Duncraig, Castle Street, Brechin.

1930. Ferguson, Harry Scott, W.S., Linden, West Park Road, Dundee.

1932. Ferguson, Professor J. De Lancey, M.A., Ph.D., Professor of English, Western Reserve University, 2869 Scarborough Road, Cleveland, Ohio, U.S.A.

1936. Ferguson, Kenneth Cairnie, 2 Clarendon Crescent, Edinburgh, 4.

1933.*Ferguson-Watson, Hugh, Ph.D., M.D., D.P.H., F.R.S.E., F.R.F.P.S., 109 Montgomery Street, Edinburgh, 7.

1899.*Findlay, James Leslie, Architect, 10 Eton Terrace, Edinburgh, 4.

1936. Finlayson, Alexander M., 31 Brown Place, Wick.

1921. Finlayson, Rev. William Henry, The Rectory, Thelnetham, Diss, Suffolk.

1925.*Fish, Thomas Wilson, J.P., M.Inst.N.A., Kirklands, Dunbar.

1922.*Fleming, John Arnold, Locksley, Helensburgh.

1928. Flett, James, A.I.A.A., Hillhead, Bankend Road, Dumfries.

1935. Forbes, Donald J., M.B., Ch.B., Medical Superintendent, Craigmill House, Strathmartine, by Dundee.

1935. Forbes, John Foster, F.R.A.I., Sele Court, Beeding, West Sussex.

1931. Fordyce, William, M.D., F.R.C.P.E., 17 Walker Street, Edinburgh, 3.

1935. Foster-Smith, Alfred Henry, 6 Montpelier Road, Ealing, London, W. 5.

1906.*Foulkes-Roberts, Arthur, Westwood, Goring-on-Thames.

1923. Franklyn, Charles A. H., M.D. (Laus.), M.B., B.S. (Lond.), M.A. (Ill.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), F.R.S.Medicine, Membre de la Société Suisse d'Héraldique, The Corner House, 34 Queensway, Wragby Road, Lincoln.

1934. Fraser, Alasdair, M.A., of Raonmór, 20 Gladstone Avenue, Dingwall, Ross-shire.

1933. Fraser, Charles Ian, of Reelig, M.A.(Oxon.), Reelig House, Kirkhill, Inverness-shire.

1932. Fraser, Rev. Ewen, The Manse, Ullapool, Ross-shire.

1921. Fraser, George Mackay, Solicitor and Banker, Summerlea House, Portree, Skye.

1926. Fraser, Sir John, K.C.V.O., M.C., M.D., F.R.C.S.E., Regius Professor of Clinical Surgery, University of Edinburgh, 32 Moray Place, Edinburgh, 3.

1917. Fraser, William, 212 Causewayside, Edinburgh, 9.

1922. Fyfe, William, 139 Guildford Road, Portsmouth.

1930. Gair, G. Robert (no address).

1929. Galbraith, J. J., M.D., D.P.H., 4 Park Street, Dingwall.

1924. Galloway, A. R., O.B.E., M.A., M.B., C.M., 29 Queen's Road, Aberdeen.

1933. Galloway, James L., F.S.M.C., F.I.O., "Coila," Cumnock, Ayrshire.

1920.*Galloway, Thomas L., Advocate, Auchendrane, by Ayr.

1918. Garden, William, Advocate in Aberdeen, 4 Rubislaw Terrace, Aberdeen.

1925. Gardner, George, M.C., The Kibble House, Greenock Road, Paisley.

1926.*Gardner, John C., B.L., Ph.D., Solicitor, Cardowan, Stonehaven.

1921. Gardner, Willoughby, D.Sc., F.S.A., Y Berlfa, Deganwy, North Wales.

1923. Garrett, Matthew Laurie, 1 Wester Coates Gardens, Edinburgh, 12.

1919. Gass, John, M.A., Olrig, Carluke, Lanarkshire.

1926. Gauld, H. Drummond, of Kinnaird Castle, by Inchture, Carse of Gowrie, Allandale, Saughton Road, Corstorphine, Edinburgh, 12.

1935. Gentles, John, Architect, 5 Bowling Street, Coatbridge.

1930.*Gibb, Sir Alexander, G.B.E., C.B., Queen Anne's Lodge, Westminster, London, S.W. 1.

1923.*Gibb, John Taylor, High Street, Mauchline, Ayrshire.

1923. Gibson, Andrew, J.P., M.B., F.R.C.S. (Edin.), St Brinnans, Baillieston, near Glasgow.

1912. Gibson, John, c/o The British Linen Bank, Glasgow.

1933. Gibson, W. J., C.B.E., 15 Plewlands Avenue, Edinburgh.

1922. Gillespie, John, L.R.I.B.A., F.R.S.A., 56 Kenmure Street, Pollokshields, Glasgow.

1924. Gillies, Rev. William A., B.D., The Manse, Kenmore, Perthshire.

1924. Gillon, Stair Agnew, Advocate, Solicitor of Inland Revenue, Bankhead, Balerno, Midlothian.

1926.*Gilmour, John, 24 Kingsacre Road, King's Park, Glasgow, S. 4.

1883. Gilmour, Brigadier-General Sir Robert, Bt., C.B., C.V.O., D.S.O., of Craigmillar, The Inch, Liberton, Edinburgh, 9.

1922. Gilruth, James Davie, M.A., M.D., F.R.C.P.Ed., Drumkemno, 25 Frogston Road West, Edinburgh, 10.

1922. Girvan, Ritchie, M.A., University Lecturer, Ekadasha, Cleveden Gardens, Glasgow, W. 2.

1912.*Gladstone, Hugh S., M.A., F.R.S.E., Capenoch, Thornhill, Dumfriesshire.

1933. Goldsmith, Miss Elizabeth, M.A.(Hons.), 14 West Holmes Gardens, Musselburgh.

1921. Gordon, Rev. James Bryce, The Manse, Oldhamstocks, Cockburnspath.

1933. Gordon-Campbell, Iain C., F.R.A.I., "Berners," Marlbro' Road, St Albans, Herts.

1927. Gourlay, William Robert, C.S.I., C.I.E., Kenbank, Dalry, Kirkcudbrightshire.

1913.*Graham, Angus, M.A., Secretary, Royal Commission on Ancient and Historical Monuments of Scotland, 27 York Place, Edinburgh, 1,—*Secretary.*

1933. Graham, Francis B., Solicitor, 61 Reform Street, Dundee.

1917. Graham, James Gerard, Captain, 4th Battalion The Highland Light Infantry, Quinta do Alvör, 147 Rua Azevedo, Coutinho, Oporto, Portugal.

1920. Graham, James Maxtone, C.A., 14 Randolph Crescent, Edinburgh, 3.

1924. Grahame, Lieut.-Col. George Campbell, of Over Glenny, Ingleholm, North Berwick.

1926. Grahame Thomson, Leslie, A.R.S.A., A.R.I.B.A., F.R.I.A.S., "Srongara," West Linton, Peeblesshire.

1888. Grant, Sir Francis J., K.C.V.O., LL.D., W.S., *Lord Lyon King of Arms*, H.M. General Register House, Edinburgh, 2.

1929. Grant, John, Civil Servant, "Lochnagar," 35 Groathill Avenue, Craigleith, Edinburgh, 4.

1930. Grant, Walter G., of Trumland, Hillhead, Kirkwall, Orkney.

1931. Grant, William Æneas, Alpha Cottage, Union Street, Kirkintilloch.

1937. Gray, Alexander, M.A., LL.B., Garscadden House, Drumchapel, Glasgow, N.W.

1937. Gray, Frank, Balgowan School, Downfield, Dundee.

1933. Gray, James Dow, J.P., "Ballochmyle," Strathmore Avenue, Dundee, Angus.

1915. Gray, William Forbes, F.R.S.E., 8 Mansionhouse Road, Edinburgh, 9.

1935. Greenhill, William, C.A., 34 Heriot Row, Edinburgh, 3.

1927. Greig, Francis, Lindean, Barony Terrace, Corstorphine, Edinburgh, 12.

1928. Greig, William Mackie, "Orphir," 9 Ashgrove Road West, Aberdeen.

1922. Grieve, James, 54 Terregles Avenue, Pollokshields, Glasgow, S. 1.

1922. Grieve, William Grant, 10 Queensferry Street, Edinburgh, 2.

1920. Guild, James Harrower, W.S., 5 Coates Gardens, Edinburgh, 12.

1931. Gunn, John, M.A., D.Sc., F.R.S.G.S., 62 Blacket Place, Edinburgh, 9.

1911. Gunson, Rev. Ernest Sherwood, M.A., The Manse of New Monkland, by Airdrie.

1907.*Guthrie, Charles, W.S., 3 Charlotte Square, Edinburgh, 2.

1927. Guthrie, Douglas, M.D., F.R.C.S., 21 Clarendon Crescent, Edinburgh, 4.

1924. Guthrie, Miss Helen Lingard, Carnoustie House, Carnoustie.

1905. Guthrie, Thomas Maule, Solicitor, Royal Bank of Scotland, Brechin.

1930. Guy, John, M.A., 7 Campbell Street, Greenock.

1928. Gwynne, Mrs F. H. X., The International Sportsmen's Club, Upper Grosvenor Street, London, W. 1.

1933.*Haggart, Provost James Dewar, O.B.E., J.P., Eilean Riabhach, Aberfeldy, Perthshire.

1936. Haldane-Robertson, Langton, F.S.S., M.R.S.L., Consul for Brazil, Box 282, G.P.O., Kingston, Jamaica, British West Indies.

1921. Hall, Mrs J. Macalister, of Killean, Killean House, Tayinloan, Argyll.

1936. Hall, W. R., J.P., Bank Manager, The Shieling, Cramond Brig.

1929. Halliday, Thomas Mathieson, c/o Messrs Barton & Sons, 11 Forrest Road, Edinburgh, 1.

1928. Hamilton, Miss Dorothea E., 48 India Street, Edinburgh, 3.

1925. Hamilton, James, J.P., 5 Leefield Drive, Netherlee, Glasgow, S. 4.

1922.*Hamilton, John, Punta Loyola, Patagonia, South America.

1933. Hamilton, Sir Robert W., Knt., F.R.G.S., The Grange, Hadlow Down, Sussex.

1901.*Hamilton of Dalzell, The Right Hon. Lord, K.T., C.V.O., Dalzell, Motherwell.

1935. Hampson, Charles P., Wentworth, Eccles, Lancs.

1919. Hanna, Miss Chalmers, Dalnasgadh, Killiecrankie, Perthshire.

1925.*Hanna, William Gemmill Chalmers, O.B.E., C.A., 6 Lennox Street, Edinburgh, 4.

1926. Hannah, Ian C., M.A., M.P., F.S.A., The Whim, Lamancha, Peeblesshire.

1911. Hannan, Rev. Canon Thomas, M.A., The Rectory, Links Place, Musselburgh.

1912. Hannay, Robert Kerr, LL.D., *H*.R.S.A., H.M. Historiographer in Scotland, Fraser Professor of Scottish History, University of Edinburgh, 5 Royal Terrace, Edinburgh, 7.

1924. Harding, William, F.Z.S., F.R.G.S., Royal Societies Club, St James's Street, London, S.W. 1.

1920. Harding, William Gerald, F.R.S.E., M.R.S.L., F.R.Hist.S., F.L.S., Peckwater House, Charing, Kent.

1903.*Harris, Walter B., Marlborough Club, Pall Mall, London, S.W. 1.

1927.*Harrison, Edward S., The Bield, Elgin.

1933. Harrison, James, M.D., J.P., 31 Howard Street, North Shields, Northumberland.

1922. Hay, Alexander Mackenzie, 1 Inverness Terrace, London, W. 2.

1927. Hay, Major Malcolm V., Seaton, Old Aberdeen.

1922. Haychaft, Frank W., "Evershot," Haynes Park, near Bedford.

1934. Heath, Rev. Alban, "Marandella," 3 Peak Drive, Pinelands, Cape Town, South Africa.

1935. Helman, Harold (no address).

1924.*Hemp, Wilfrid J., F.S.A., Secretary, Ancient Monuments Commission for Wales and Monmouthshire, 20 Great Smith Street, Westminster, London, S.W. 1.

1927.*Hencken, Hugh O'Neill, 100 Beacon Street, Boston, Mass., U.S.A.

1902. HENDERSON, ADAM, B.Litt., 318 Byres Road, Glasgow, W. 2.

1928. HENDERSON, ALLAN MACFARLANE, W.S., 23 Grosvenor Street, Edinburgh, 12.

1930. HENDERSON, Miss DOROTHY M., Kilchoan, Kilmelford, Argyll.

1928.*HENDERSON, Rev. GEORGE D., B.D., D.Litt., D.D., Professor of Church History in the University of Aberdeen, 3 The Chanonry, Aberdeen.

1889.*HENDERSON, JAMES STEWART, 1 Pond Street, Hampstead, London, N.W. 3.

1934. HENDERSON, Mrs MABEL DAISY, 33 Seymour Street, Dundee, Angus.

1937. HENDERSON, STUART M. K., B.Sc., Ph.D., Curator of Archæology and History Department, Kelvingrove Museum, Glasgow, C. 3.

1927. HENDERSON, Miss SYBIL HORN, Turfhills, Kinross.

1926. HENDERSON, THOMAS, C.B.E., J.P., Actuary of The Savings Bank of Glasgow, 5 Belmont Crescent, Glasgow, W. 2.

1931. HENDERSON, WILLIAM, M.A., 66 Baird Drive, Saughtonhall, Edinburgh, 12.

1920. HEPBURN, W. WATT, 23 Beechgrove Terrace, Aberdeen.

1891. HERRIES, Lieut.-Colonel WILLIAM D., of Spottes, Spottes Hall, Castle Douglas.

1887. HEWISON, Rev. J. KING, M.A., D.D., Kingsmede, Thornhill, Dumfriesshire.

1929. HEWISON, JOHN REID, Pierowall, Westray, Orkney.

1934. HILLEARY, IAIN ROBERTSON, The Lodge, Edinbane, Isle of Skye.

1926. HOGARTH, JAMES, 7 Carlton Terrace, Edinburgh, 7.

1923. HOILE, HENRY JOHN, M.A., M.B., Ch.B., 145 High Street, Montrose.

1909.*HOLMS, JOHN A., Formakin, Bishopton, Renfrewshire.

1914. HOME, GORDON C., Major, R.A.S.C., Foxbury, Hambledon, Surrey.

1926. HOOD, Mrs VIOLET M., Midfield, Lasswade.

1928. HOPE, Rev. LESLIE P., M.A., Ph.D., 9 Bute Mansions, Hillhead Street, Glasgow, W. 2.

1927. HOPKIRK, Rev. DUDLEY STUART, M.A., B.D., B.Litt. (Oxon.), 18 Regent Terrace, Edinburgh, 7.

1933. HORN, WILLIAM, 27 Comiston Drive, Edinburgh, 10.

1932. HOTCHKIS, Mrs PENELOPE, Mid-Dykebar, Paisley.

1927. HOULT, JAMES, F.R.Hist.S., 12 Brookland Road, Stoneycroft, Liverpool.

1928. HOUSTON, KEYWORTH E., F.R.G.S., St Bernard's, The Ridgeway, Rothley, Leicester.

1932. HOW, Commander GEORGE EVELYN PAGET, Royal Navy, 15 Stratton Street, London, W. 1.

1925.*HOWARD DE WALDEN, The Right Hon. LORD, Seaford House, London, S.W. 1.

1886. HOWDEN, JOHN M., C.A., 11 Eton Terrace, Edinburgh, 4.

1929. HOWELL, Rev. ALEXANDER R., M.A., 112 South Street, St Andrews, Fife.

1936. HOY, GEORGE FREDERICK, Secretary, The St Andrew Society, 104 Findhorn Place, Edinburgh, 9.

1930.*HUME, Lieut.-Col. EDGAR ERSKINE, M.C., U.S. Army, B.A., M.A., M.D., LL.D., D.Litt., Dr. P.H., D.T.M., Sc.D., The Magnolias, Frankfort, Kentucky.

1927. HUNTER, JOHN, Auchenreoch, by Brechin, Angus.

1932. HUNTER, ROBERT LESLIE, Newlands House, Polmont, Stirlingshire.

1921.*HUNTER, THOMAS DUNCAN, J.P., 11 Gloucester Place, Edinburgh, 3.

1912. HYSLOP, ROBERT, F.R.Hist.S., Field House, Hylton, Sunderland, Co. Durham.

1908. INGLIS, ALAN, Art Master, Arbroath High School, 4 Osborne Terrace, Millgate Loan, Arbroath.

1904. INGLIS, FRANCIS CAIRD, Rock House, Calton Hill, Edinburgh, 7.

1911.*INGLIS, HARRY R. G., 10 Dick Place, Edinburgh, 9.

1906.*INGLIS, JOHN A., K.C., King's and Lord Treasurer's Remembrancer, 13 Randolph Crescent, Edinburgh, 3.

1928. INGLIS, JOHN A., B.Sc., Oak Cottage, Alma Road, Fort William.

1933. INGRAM, W., K.C., 61 Great King Street, Edinburgh, 3.

1920. INNES, THOMAS, of Learney and Kinnairdy, *Albany Herald*, 35 Inverleith Row, Edinburgh, 4.

1923. IRVINE, QUENTIN H. I., Barra Castle, Oldmeldrum, Aberdeenshire.

1932. JACK, JAMES, F.L.S., 6 Alexandra Place, Arbroath.

1913. JACKSON, GEORGE ERSKINE, O.B.E., M.C., W.S., 26 Rutland Square, Edinburgh, 1.

1918. JAMIESON, JAMES H., 14 Sciennes Gardens, Edinburgh, 9.

1923.*JAMIESON, JOHN BOYD, M.D., F.R.C.S.E., 43 George Square, Edinburgh, 8.

1922. JEHU, THOMAS JOHN, M.A., M.D., Professor of Geology, University of Edinburgh, 35 Great King Street, Edinburgh, 3.

1916.*JOHNSON, JOHN BOLAM, C.A., 12 Granby Road, Edinburgh, 9,—*Treasurer.*

1902.*JOHNSTON, ALFRED WINTLE, Architect, 30 Goblins Green, Welwyn Garden City, Herts.

1907. JOHNSTON, Sir WILLIAM CAMPBELL, LL.D., W.S., 4 Rothesay Terrace, Edinburgh, 3.

1936. JOHNSTON-SAINT, Captain PETER, M.A., F.R.S.E., 4 Wyndham Place, London, W. 1.

1892. JOHNSTONE, HENRY, M.A. (Oxon.), 69 Northumberland Street, Edinburgh, 3.

1934. JOHNSTONE, The Ven. SAMUEL MARTIN, M.A., F.R.H.S., Archdeacon of Sydney, Bishopscourt, Edgecliff, Sydney, New South Wales, Australia.

1931. JONES, DONALD HERBERT, 18 Woodland Road, Neath, Glam.

1930. JONES, Mrs ENID POOLE, Glyn, West Kilbride, Ayrshire.

1928. JONES, H. R., Dalmeny Court, Duke Street, Piccadilly, London, S.W. 1.

1917. KATER, ROBERT M'CULLOCH, Coniston, Glasgow Road, Kilmarnock.

1910. KAY, ARTHUR, J.P., *H.*R.S.A., F.S.A., 11 Regent Terrace, Edinburgh, 7.

1929. KAY, JAMES CUNNINGHAM, Highway Engineer, Grove Cottage, Stow, Midlothian.

1922.*KEILLER, ALEXANDER, of Morven, Ballater, Aberdeenshire.

1911. KENNEDY, ALEXANDER BURGESS, 1 Randolph Place, Edinburgh, 3.

1924. KENNEDY, JOHN, Hilton Hall, Prestwich, Lancs.

1930. KENNEDY, PETER, M.A., 20 Northfield Terrace, Edinburgh, 8.

1928. KENNEDY, WILLIAM DOW, M.A., Director of Education (Banffshire), Earlsmount, Keith.

1907. KENT, BENJAMIN WILLIAM JOHN, Tatefield Hall, Beckwithshaw, Harrogate.

1910. KER, CHARLES, M.A., C.A., 8 Montgomerie Crescent, Glasgow, W. 2.

1896. KERR, HENRY F., A.R.I.B.A., 16 Duke Street, Edinburgh, 1.

1927. KERR, ROBERT, M.A., Keeper of the Art and Ethnographical Departments, Royal Scottish Museum, 34 Wardie Road, Edinburgh, 5,—*Curator of Coins.*

1911.*KETCHEN, W. T., W.S., 1 Jeffrey Avenue, Blackhall, Edinburgh, 4.

1932. KILBRIDE-JONES, HOWARD EDWARD, 34 West Garth Avenue, Colinton, Edinburgh, 13.

1912.*KING, Captain CHARLES, F.S.Sc. Lond., F.C.S., 11 Kelvin Drive, Glasgow, N.W.

1926. KING, Mrs ELIZA MARGARET, of Arntomy, Port of Menteith, Perthshire.

1912.*KING, Sir JOHN WESTALL, Bt., 3 Prince's Gardens, London, S.W. 7.

1926. KINNEAR, WILLIAM FRASER ANDERSON, Colebrooke, Kersland Drive, Milngavie.

1930. KIRK, ROBERT, M.B., Ch.B., B.Sc., Sudan Medical Service, Khartoum, The Sudan.

1932. KIRK, Rev. ROBERT LEE, The Manse, Kirkgunzeon, Kirkcudbrightshire.

1919. KIRKNESS, WILLIAM, 6 Learmonth Place, Edinburgh, 4.

1896. KIRKPATRICK, JOHN G., W.S., 2 Belford Park, Edinburgh, 4.

1927. KIRKWOOD, JAMES, Beltrees, Dunchurch Road, Oldhall, near Paisley.

1922. KNEEN, Miss F. BEATRICE, Ballamoar House, Ballaugh, Isle of Man.

1906. KNOWLES, Captain WILLIAM HENRY, F.S.A., Chesfield, Abbey Road, Malvern.

1924.*KNOX, WILLIAM BARR, Ryefield, Dalry, Ayrshire.

1922. LACAILLE, ARMAND D. (Archæologist, Wellcome Historical Medical Museum), 2 Pasture Road, North Wembley, Middlesex.

1936. LAIDLER, Miss BARBARA, Orchard End, Roseacre Lane, Bearsted, Kent.

1910.*LAIDLER, PERCY WARD, Medical Officer of Health, City Hall, East London, C.P., South Africa.

1923. LAMB, Rev. GEORGE, B.D., Beechwood, Melrose.

1929. LAMONT, JOHN M., O.B.E., LL.D., J.P., Clerk of Lieutenancy and Vice-Convener of Buteshire, etc., Ardentigh, Port Bannatyne, Bute.

1901.*LAMONT, Sir NORMAN, Bt., M.P., of Knockdow, Toward, Argyllshire.

1932. LANG, The Very Rev. MARSHALL B., T.D., D.D., Whittinghame Manse, Haddington.

1932. LARG, ROBERT JAMES, J.P., "The Hollies," 63 Clepington Road, Maryfield, Dundee.

1930. LAWSON, W. B., 26 Roseburn Street, Edinburgh, 12.

1934. LEACH, Dr WILLIAM JOHN, Eilleandonan, Beauly.

1910.*LEIGH, Colonel JAMES HAMILTON, Shenley Cottage, Bagborough, Taunton, Somerset.

1926. LEITCH, JAMES, Crawriggs, Kirkintilloch Road, Lenzie.

1933. LEITCH, P. A., Assoc.M.Inst.C.E., 4 Silverwells Crescent, Bothwell, Lanarkshire.

1925. LESLIE, Sheriff JOHN DEAN, 16 Victoria Place, Stirling.

1935. LESSELLS, JAY, D.A.Edin., L.I.F.A.Lond., Surma, West Kilbride, Ayrshire.

1902.*LEVESON-GOWER, F. S., Travellers' Club, Pall Mall, London.

1927. LIDDELL, BUCKHAM W., W.S., Union Bank House, Pitlochry.

1927. LIDDELL, Miss DOROTHY MARY, The Old Rectory, Stratfield, Turgis, Basingstoke, Hants.

1935. LIDDLE, LAURENCE H., Ballycroy, Braid Farm Road, Edinburgh, 10.

1928. LIGHTBODY, JOHN, Solicitor, Oatlands, Lanark.

1919.*LINDSAY, Mrs BROUN, of Colstoun, 51 Cadogan Place, London, S.W. 1.

1927. LINDSAY, IAN GORDON, 56 Castle Street, Edinburgh, 2.

1890. LINDSAY, LEONARD C. C., 15 Morpeth Mansions, London, S.W. 1.

1935. LINDSAY, PHILIP, 25 Church Square, Rye, Sussex.

1925. LING, ARTHUR, 28 Kinross Avenue, Cardonald, Glasgow, S.W. 2.

1920. LINLITHGOW, The Most Hon. The Marquess of, P.C., K.T., G.C.I.E., Hopetoun House, South Queensferry.

1921. LINTON, ANDREW, B.Sc., Gilmanscleuch, Selkirk.

1925. LITTLE, JOHN R., 5 Dalrymple Crescent, Edinburgh, 9.

1881.*LITTLE, ROBERT, R.W.S., 2B Clanricarde Gardens, Tunbridge Wells.

1924. LOCH, Lt.-Colonel PERCY GORDON, C.I.E., Binns, Linlithgow.

1936. LOCKHART, Mrs AGNES M'LAREN, 16 Broompark Drive, Dennistoun, Glasgow, E. 1.

1901.*LONEY, JOHN W. M., 6 Carlton Street, Edinburgh, 4.

1917. LOVE, WILLIAM HENDERSON, J.P., M.A., A.Mus., Rowanbank, Craigendoran, Helensburgh.

1926. LOW, ALEXANDER, M.A., M.D., Professor of Anatomy in the University of Aberdeen, 144 Blenheim Place, Aberdeen.

1924. LUMSDEN, HARRY, M.A., LL.B., LL.D., J.P., 105 West George Street, Glasgow, C. 2.

1934. LUMSDEN, JAMES, 130 Blenheim Place, Aberdeen.

1935. LYLE, WILLIAM, Braih na Bruaich, 57 Lanfine Road, Paisley.

1936. LYON, DAVID MURRAY, M.D., Druim, Colinton.

1936.*LYON, WILLIAM KIRK, W.S., 21 Lynedoch Place, Edinburgh, 3.

1932. MACARTHUR, Rev. GEORGE W., M.A., The Manse, Chryston.

1927.*MACAULAY, JAMES, F.S.I., F.F.S., M.T.P.I., 37 St Vincent Crescent, Glasgow, C. 3.

1929.*MACAULAY, JOHN DRUMMOND, Bank Agent, 7 Greenlaw Avenue, Paisley.

1928.*MACAULAY, THOMAS BASSETT, LL.D., President, Sun Life Assurance Co. of Canada, Montreal, Canada.

1935. M'BRIDE, DANIEL, B.L., Sheriff Clerk of Dunbartonshire, County Buildings, Dumbarton.

1932. M'CABE, JAMES OSBORNE, B.A., M.A., 20 Eastercraigs Road, Dennistoun, Glasgow, E.1.

1926. M'CASKILL, JOHN, J.P., Estate Office, Gairloch, Ross-shire.

1928. M'CLYMONT, Rev. J. DOUGLAS, M.A., B.D., The Manse of Old Cumnock, Cumnock, Ayrshire.

1935. MACCOLL, HECTOR HENRY, O.B.E. (Mil. Div.), Knight of the Royal Order of Vasa, 2 rue Litolff, Paris, XVIe.

1930. MACCOLL, HUGH GEOFFREY, M.A., B.Sc., Craigrannoch, Ballachulish, Argyll.

1930. MACCOLL, WILLIAM DUGALD, BM/WDMC, London, W.C. 1.

1915. M'CORMICK, ANDREW, 66 Victoria Street, Newton-Stewart.

1924. M'CORMICK, JOHN, 380 Carntyne Road, Glasgow, E. 2.

1925. MACCORQUODALE, HUGH, Inverlochy, Tweedsmuir Road, Cardonald, Glasgow.

1924.*M'COSH, JAMES, Solicitor, Pitcon, Dalry, Ayrshire.

1925.*MACCOWAN, Rev. RODERICK, Free Church Manse, Kiltarlity, Inverness-shire.

1929. M'CRAE, THOMAS, F.R.I.A.S., 6 N.E. Circus Place, Edinburgh, 3.

1936. MACCUISH, Rev. DONALD, M.A., The Manse, Isle of Iona, Argyll.

1926. MACDONALD, DONALD SOMERLED, W.S., 1 Hill Street, Edinburgh, 2.

1900.*MACDONALD, Sir GEORGE, K.C.B., M.A., LL.D., D.Litt., Litt.D., F.B.A., *H.*R.S.A., 17 Learmonth Gardens, Edinburgh, 4,—*President.*

1929. MACDONALD, HENRY LACHLAN, of Dunach, Dunach, Oban, Argyll.

1929. MACDONALD, JAMES H., M.B., Medical Superintendent, "Howford House," Crookston, Glasgow, S.W. 2.

1936. MACDONALD, Miss SHEILA M., Blarour, Spean-bridge, Inverness-shire.

1930. MACDONALD, WILLIAM, Inspector of Poor, Craigmore, Croyard Road, Beauly.

1928. MACECHERN, Rev. C. VICTOR A., M.A., 31 King Street, Aberdeen.

1908. M'ELNEY, Rev. ROBERT, M.A., The Manse, Downpatrick, County Down.

1926. M'ERLICH, RODERICK, Factor, Ostrom House, Lochmaddy, North Uist.

1936. MACFARLANE, D. R., Observatory Boys' High School, Mowbray, Cape, South Africa.

1935. MACFARLANE, Captain JOHN, Careening Cove, Milson's Point, New South Wales, Australia.

1898.*MACGILLIVRAY OF MACGILLIVRAY, C.M., M.D., D.Sc., LL.D., 23 South Tay Street, Dundee.

1935. MACGILLIVRAY, Rev. WILLIAM, West Manse, Cairnie, Huntly, Aberdeenshire.

1901.*MACGREGOR, ALASDAIR R., of Macgregor, Cardney, Dunkeld.

1935. MACGREGOR, JOHN GEDDES, Ph.D., 22 Chalmers Street, Edinburgh, 3.

1918. MACGREGOR, Rev. WILLIAM CUNNINGHAM, Dunira House, Restalrig Road, South, Edinburgh, 7.

1924. M'GROUTHER, THOMAS, Meigor, Carronvale Road, Larbert, Stirlingshire.

1933. M'HARDY, IAN, Director of Education, Caithness, Randolph Place, Wick.

1930. M'INNES, JOHN, 3272 33rd Avenue West, Vancouver, B.C.

1926. M'INTIRE, WALTER T., B.A., St Anthony's, Milnthorpe, Westmorland.

1897.*MACINTYRE, P. M., Advocate, Auchengower, Brackland Road, Callander.

1927.*MACKINTOSH, GORDON NASMYTH, Architect (no address).

1932. MACINTOSH, HUGH, F.R.I.B.A., 94 Sandy Lane, Wallington, Surrey.

1913. MACKINTOSH, H. B., M.B.E., Redhythe, Elgin.

1937. MCINTOSH, JOHN, M.A., Schoolhouse, Alyth, Perthshire.

1922.*MACKINTOSH, Rev. R. SMITH, Hon. C.F., The Manse, Girvan, Ayrshire.

1931. MACKAY, ALISTER MACBETH, 23 Luttrell Avenue, Putney, London, S.W. 15.

1925. MACKAY, DONALD, Member of the Scottish Land Court, 6 Learmonth Terrace, Edinburgh, 4.

1908. MACKAY, GEORGE, M.D., F.R.C.S.E., 10 Rothesay Place, Edinburgh, 3.

1924. MACKAY, GEORGE DODS, Villa-Twelve, Esplanade Terrace, Joppa.

1932. MACKAY, J. B., A.R.I.A.S., Architect, H.M. Office of Works, 122 George Street, Edinburgh, 2.

1933. MACKAY, JOHN, S.S.C., 37 York Place, Edinburgh, 1.

1912. MACKAY, NORMAN DOUGLAS, M.D., B.Sc., D.P.H., Dall-Avon, Aberfeldy.

1929. MACKAY, Rev. P. HUGH R., M.A., St John's Manse, Torphichen, by Bathgate.

1934. MACKAY, R. F. B., B.A.(Cantab.), F.R.A.I., Glencruitten, Oban, Argyll.

1909. MACKEAN, Major NORMAN M., 21 Carriagehill Drive, Paisley.

1924. MACKECHNIE, Rev. JOHN, M.A. (Hons.), B.D., 3 Eldon Terrace, Partickhill, Glasgow.

1923. MACKECHNIE, ROBERT G. S., R.B.A., 4 Watch Bell Street, Rye, Sussex.

1924. MACKELCKEN, LANGFORD H., L.R.I.B.A., 57 Kingsmead Road, Tulse Hill, London, S.W. 2.

1930. M'KELVIE, JAMES, 17 Rutland Square, Edinburgh, 1.

1923. MACKENZIE, ALEXANDER G. R., F.R.I.B.A., Lower Woodend, Marlow, Bucks.

1911. MACKENZIE, ALEXANDER J., Solicitor, Clydesdale Bank Buildings, 62 Academy Street, Inverness.

1933. MACKENZIE, Rev. ARCHIBALD, M.A., B.D. (no address).

1919. MACKENZIE, HECTOR HUGH, J.P., "Ballone," 37 Buckstone Terrace, Edinburgh, 10.

1931. MACKENZIE, THOMAS, J.P., F.E.I.S., Schoolhouse, Conon-Bridge, Ross-shire.

1904. MACKENZIE, WILLIAM COOK, Deargaill, St George's Road, St Margarets-on-Thames.

1904. MACKENZIE, W. M., M.A., D.Litt., 8 Cargil Terrace, Edinburgh, 5.

1928. M'KERROW, ALEXANDER ROBERT CAMPBELL, M.B., Ch.B. Edin., 52 South Street, St Andrews.

1926. M'KERROW, MATHEW HENRY, Solicitor, Dunard, Dumfries.

1926. MACKIE, ROBERT L., M.A., B.Litt., Lecturer in English and History, Dundee Training College, Greenloaning, Wormit, Fife.

1930. MACKILLOP, Rev. ALLAN MACDONALD, B.A., B.D., Lecturer, Faculty of Theology, Emmanuel College, Wickham Terrace, Brisbane, Queensland, Australia.

1930. MACKINNON, BENJAMIN BLACK, J.P., "Newark," 20 Hutchison Drive, Canniesburn, Bearsden, Glasgow.

1925. MacKinnon, Rev. Donald, Free Church Manse, Portree, Skye.

1931. MacKinnon, Donald S., Leob, Elliot Place, Colinton, Midlothian.

1915. MacKirdy, Captain Elliot M. S., M.A. (Oxon.), Abbey House, Malmesbury, Wiltshire.

1919.*Maclagan, Douglas Philip, W.S., 28 Heriot Row, Edinburgh, 3,—*Secretary*.

1923.*Maclagan, Miss Morag, 28 Heriot Row, Edinburgh, 3.

1922. M'Laren, Thomas, Burgh Engineer, Redcliffe, Barnhill, Perth.

1928. MacLean, Archibald, "Helenslea," Bridge of Allan.

1934. Maclean, Dugald, M.A., LL.B., 10 York Place, Edinburgh, 1.

1934. Maclean, Rev. John, Manse of Lochalsh, Balmacara, Kyle, Ross-shire.

1932. MacLean, Robert Gellatly, F.A.I. (Lond.), 300 Ferry Road, Dundee.

1885.*MacLehose, James, M.A., LL.D., F.S.A., The Old Parsonage, Lamington, Lanarkshire.

1931. McLellan, Robert A., M.I.Loco.E., Invergarry, Church Stretton, Shropshire.

1937. McLelland, Charles J., 12 De Walden Terrace, Kilmarnock.

1934. M'Leod, Alexander Grant, M.A., "Harpsdale," Campbell Street, Darvel, Ayrshire.

1936. McLeod, Alexander Norman, 1 Blackford Road, Edinburgh, 10.

1930. M'Leod, Donald, Suite 714, Vancouver Block, 736 Granville Street, Vancouver, B.C., Canada.

1933. MacLeod, Rev. Donald, The Manse, Applecross, Ross-shire.

1910. Macleod, F. T., 55 Grange Road, Edinburgh, 9.

1926. Macleod, Rev. John, O.B.E., Hon. C.F., 8 Lansdowne Crescent, Glasgow, N.W.

1924. MacLeod, Sir John Lorne, G.B.E., LL.D., 72 Great King Street, Edinburgh, 3.

1922. Macleod, Rev. Malcolm, M.A., 24 Queen Mary Avenue, Glasgow, S. 2.

1925. MacLeod, Rev. William, B.D., Ph.D., St Broue Manse, Port-Bannatyne, Rothesay.

1919. Macleroy, Rev. Campbell M., B.D., Minister of the Church of Scotland, West Manse, Ardersier, Inverness-shire.

1926. M'Lintock, James, Ivy House, Lennoxtown.

1933. MacMaster, Thomas, Secretary, Caledonian Insurance Company, 190 Grange Loan, Edinburgh, 9.

1905. Macmillan, The Right Hon. Lord, of Aberfeldy, P.C., LL.D., 44 Millbank, Westminster, London, S.W. 1.

1916.*M'Millan, Rev. William, D.D., Ph.D., Chaplain to the Forces, St Leonard's Manse, Dunfermline.

1928. Macmillan, William E. F., F.S.A., 42 Onslow Square, London, S.W. 7.

1933. M'Murdo, James, 8571 144th Street, Jamaica, N.Y., U.S.A.

1936. M'Naughton, Duncan, M.A., 4 Forth Crescent, Stirling.

1915. Macneil, Robert Lister, of Barra, Barra House, Marlbro', Vermont, U.S.A.

1929. M'Neill, David, M.A., School House, Loanhead, Midlothian.

1936. MacNeill, Rev. Malcolm, The Manse of Kilmodan, Glendaruel, Argyll.

1934.*M'Neill, Neil, of Ardnacross, 17 Fenchurch Street, London, E.C. 3.

1933. MacNulty, Ignatius, 81 Wallace Street, Malden, Mass., U.S.A.

1928. M'Pherson, Rev. Alexander, B.D., Ph.D., The Manse, Grangemouth.

1918. MacPherson, Donald, 3 St John's Road, Pollokshields, Glasgow, S. 1.

1933. Macpherson, Hector, 90-58 186th Street, Hollis, Long Island, New York, U.S.A.

1921. M'Pherson, James, Kilrymonth, 65 Tuffley Crescent, Gloucester.

1909.*MacRae, Major Colin, C.B.E., of Feoirlinn, Colintraive, Argyll.

1926. Macrae, Rev. Duncan, 26 Douglas Crescent, Edinburgh, 12.

1934. Macrae, Kenneth, Applecross, Ross-shire.

1921. M'Robbie, William Alexander, F.S.I., 102 Desswood Place, Aberdeen.

1923.*MacRobert, Lady, B.Sc., F.G.S., Douneside, Tarland, Aberdeenshire.

1935. Macvicar, Neil, W.S., 9 Belgrave Crescent, Edinburgh, 4.

1930. Marey, Arthur James, Hawthorn Cottage, Chaldon Common Road, Chaldon, Surrey.

1919. Mack, James Logan, S.S.C., F.S.A., 10 Grange Terrace, Edinburgh, 9.

1931. Magian, Anthony John Capper, M.D., B.S., F.R.I.P.H., F.R.G.S., 136 Harley Street, London, W. 1.

1926. Maitland, Mrs, of Dundrennan, Cumstoun, Twynholm, Stewartry of Kirkcudbright.

1926. Maitland, Mrs Mildred E., Ledard, Aberfoyle, Perthshire.

1928. Malcolm, Sir Ian, of Poltalloch, K.C.M.G., D.L., J.P., 46 Bryanston Square, London, W. 1.

1914. Malloch, James J., M.A., Norwood, Spylaw Bank Road, Colinton.

1919. Malloch, William Strachan, Howden Cottage, Dreghorn Loan, Colinton, Edinburgh, 13.

1901. Mann, Ludovic M'Lellan, 183 West George Street, Glasgow, C. 2.

1906. Marshall, Henry B., Rachan, Broughton, Peeblesshire.

1917. Marshall, John Nairn, M.D., Stewart Hall, Rothesay.

1925. Marshall, William, Belmont Castle, Meigle, Perthshire.

1922. Martin, George Macgregor, 31 South Tay Street, Dundee.

1921. Marwick, Hugh, M.A., D.Litt., Alton House, Kirkwall, Orkney.

1925. Marwick, James George, J.P., 21 Graham Place, Stromness, Orkney.

1933. Marwick, Thomas Waller, A.R.I.B.A., A.M.I.Struct.E., 48 Melville Street, Edinburgh, 3.

1933. Mason, John, 20 Abbotsford Street, Dundee.

1925.*Matheson, Neil, Forest Lodge, Selkirk.

1892.*Maxwell, Sir John Stirling, Bt., K.T., LL.D., *H*.R.S.A., Pollok House, Pollokshaws.

1935. Maxwell, J. Harrison, M.A., 21 Tay Crescent, Riddrie, Glasgow.

1924.*Meikle, Rev. James, B.D., 15 St Clair Terrace, Edinburgh, 10.

1920. Meldrum, Rev. Neil, B.D., Ph.D., 26 Carden Place, Aberdeen.

1929. Menzies, William, H.M. Inspector of Schools, Mayfield, Melrose.

1900. Menzies, W. D. Graham, of Pitcur, Hallyburton House, Coupar-Angus.

1927. Meredith, Rev. Thomas Downie, M.A., St Luke's Manse, 25 Comely Bank, Edinburgh, 4.

1937. Michie, Miss Hellinor T., 118 Hamilton Place, Aberdeen.

1934. Middleton, Arthur Pierce, M.A., F.R.Numis.S., 12 East 97th Street, New York City, U.S.A.

1927. Millar, J. A. S., M.V.O., W.S., 41 Coates Gardens, Edinburgh, 12.

1925. Miller, Frank, Corrie, Fruids Park, Annan, Dumfriesshire.

1911. Miller, Steuart Napier, M.A., Lecturer in Roman History, The University, Glasgow.

1929. Miller, Rev. Thomas, St Helen's Manse, High Bonnybridge, Stirlingshire.

1920. Milne, Rev. A. A., Oakfield, Doune, Perthshire.

1929. Milne, Francis M., M.A., B.Sc., M.B., D.P.H., 66 Seafield Road, Dundee.

1923. Milne, George, Craigellie House, Lonmay, Aberdeenshire.

1935. Mitchell, George Wilson, Kirktown Mills, Drumblade, Huntly, Aberdeenshire.

1922. Mooney, John, J.P., Cromwell Cottage, Kirkwall, Orkney.

1921. Moore, William James, L.R.C.S.E., L.R.C.P.E., F.R.F.P.S.G., 8 Clairmont Gardens, Glasgow, C. 3.

1933. Morison, Mrs D. B., 28 Kingsborough Gardens, Hyndland Road, Glasgow, W. 2.

1931. Morley, Henry T., F.R.Hist.S., B.Sc. (Archæology), J.P., Leicester House, King's Road, Reading.

1934. Morpeth, Robert Spottiswoode, Ph.C., M.P.S., 10 Centre Parade, Greenford Avenue, London, W. 7.

1922. Morris, Professor H. Carlton S., M.A.(Oxon.), F.R.Hist.S. (no address).

1882. Morris, James Archibald, R.S.A., Architect, Wellington Chambers, Ayr.

1934. Morris, S. V., "Woodlands," Newham Grange Avenue, Stockton-on-Tees, Co. Durham.

1928. Morrison, Robert Clark, 14 Magdala Crescent, Edinburgh, 12.

1930. Mortlock, Rev. William, M.Sc., F.R.G.S., M.R.S.L., 42 Southwood Avenue, W. Southbourne, Bournemouth.

1930. Morton, Alexander Smith, Solicitor, Victoria Street, Newton-Stewart.

1922. Mostyn-Jones, Rev. John Edward, B.D., D.D., The Vicarage, Terrington St Clement, near King's Lynn, Norfolk.

1925. Mowat, John, 24 Dunearn Street, Glasgow, C. 4.

1934. Mowbray, Miss Cecil Louisa, Little Tigh, Seal Chart, Sevenoaks, Kent.

1931. Mozeen-Hudson, Cyril, Hill Crest, Blyth Grove, Worksop, Notts.

1934. Munnoch, James, F.R.S.E., 15 Liberton Drive, Liberton, Edinburgh, 9.

1932. Munro, W. A., D.Litt., Taynuilt, Newtown St Boswells.

1933. Murray, Charles Stewart, 8 Hillview, Blackhall, Edinburgh.

1920. Murray, Captain H. W., late Technical Assistant, London Museum, c/o Messrs Stevenson & Cauldwell, 5 Fenchurch Street, London, E.C. 3.

1937. Murray, J. M., Assistant Commissioner, Forestry Commission, 76 Hillview Terrace, Corstorphine, Edinburgh, 12.

1920. Murray, James, J.P., Bank Agent, Kenwood, Bishopbriggs, Glasgow.

1931. Murray, Joseph Henry, Glengyle Lodge, 68 Bruntsfield Place, Edinburgh, 10.

1926. Murray, Miss Louisa, The White House, Anstruther, Fife.

1905.*Murray, P. Keith, W.S., 19 Charlotte Square, Edinburgh, 2.

1911.*Napier, George G., M.A., 9 Woodside Place, Glasgow.

1927.*Napier, J. G., Retired Tea Planter, 13 Lynedoch Place, Edinburgh, 3.

1933. Napier, John Watson, M.I.Chem.E., Mansfield, Alloa.

1928. Neil, N. A. G., Architect, A.R.I.B.A., 3 Forres Street, Edinburgh, 3.

1923. Nelson, Mrs, Beechwood, Calderstones, Liverpool, 18.

1936. Nesbitt, Robert C., of Nisbet House, Duns—26 Tregunter Road, London, S.W. 10.

1936. Nicholas, Donald Louis, M.A., Pine Lodge, Stanley Avenue, Higher Bebington, Cheshire.

1927. Nicholson, Gregor Donaldson Percy, F.S.G., Bodinnick, 51 Jersey Road, Lampton, Hounslow, Middlesex.

1932. Nicoll, James S., Livingstone Cottage, 40 Brechin Road, Arbroath.

1929. Notman, Robert Carfrae, W.S., 15 York Place, Edinburgh, 1.

1922. Ochterlony, Charles Francis, Overburn, Lanark Road, Currie, Midlothian.

1930. O'Donnell, Henry, F.P.C., M.S.P., 158 Sauchiehall Street, Glasgow.

1924. Ogilvie, James D., Barloch, Milngavie.

1907.*Oke, Alfred William, B.A., F.L.S., 32 Denmark Villas, Hove, Sussex.

1928. Oliphant, Rev. Johnston, B.D., The Manse, Abercorn, South Queensferry.

1926. Oliver, Mrs F. S., Edgerston, near Jedburgh.

1927. O'Malley, Mrs Owen, Bridge End, Ockham, Surrey.

1916. Orr, Lewis P., F.F.A., 3 Belgrave Place, Edinburgh, 4.

1921. Orr, Stewart, R.S.W., Corrie House, Corrie, Arran.

1933. Orrock, W. A., S.S.C., Allanshaugh, Fountainhall, Midlothian.

1928. Osborne, Rev. Thomas, Minister of Cockenzie Parish Church, Cockenzie Manse, Prestonpans.

1930. Owen, Charles Hagen, M.A., Windyridge, Wensley Grove, Harrogate.

1917. Park, Franklin A., 149 Broadway, New York.

1922. Paterson, George Duncan, 3 Balgay Avenue, Dundee.

1927. Paterson, Miss Hilda Maud Leslie, Birkwood, Banchory, Kincardineshire.

1934. Paterson, The Very Rev. John N. M., The Manse, King William's Town, C.P., South Africa.

1915. Paterson, John Wilson, C.V.O., M.B.E., A.R.I.B.A., Principal Architect, H.M. Office of Works, 11 Abinger Gardens, Murrayfield, Edinburgh, 12.

1937. Paterson, T. T., Trinity College, Cambridge.

1930. Paterson, The Very Rev. William P., D.D., LL.D., Professor of Divinity in the University of Edinburgh, Dalmore, 17 South Oswald Road, Edinburgh, 9.

1925. Patience, Alexander, "Pilmor," 2 Carrick Drive, N. Mt. Vernon, near Glasgow.

1934. Paton, Edward Richmond, B.A.(Cantab.), F.Z.S., M.B.O.U., of Hareshawmuir, *via* Kilmarnock, Ayrshire.

1936. Paton, Henry Macleod, Curator of Historical Records, H.M. Register House, 5 Little Road, Liberton, Edinburgh, 9.

1924. Paton, James, 80 High Street, Lanark.

1933. Patrick, William Macfarlane, Architect, F.R.I.A.S., 35 Lintrathen Gardens, Dundee.

1928. Patterson, Charles, F.R.S.E., Lecturer, University of Edinburgh, 22 Dudley Terrace, Trinity, Edinburgh, 6.

1925. Patterson, Richard Ferrar, M.A. (Cantab.), D.Litt.(Glas.), Graham's Dyke, Bearsden, Dunbartonshire.

1909. Paul, Arthur F. Balfour, Architect, 16 Rutland Square, Edinburgh, 1.

1928. Paul, Lieut.-Colonel J. W. Balfour, D.S.O., *Falkland Pursuivant*, Cakemuir, Tynehead, Midlothian.

1923. Paxton, Rev. William, F.R.G.S., 48 Creighton Avenue, Muswell Hill, London, N. 10.

1923. Pearson, Rev. Professor A. F. Scott, M.A., B.D., D.Th., D.Litt., F.R.Hist.S., The Manse, Johnstone, Renfrewshire.

1904. Peddie, Alexander L. Dick, W.S., 13 South Learmonth Gardens, Edinburgh, 4.

1932. Peock, Miss Mary, M.A., South Corner, Homefield Road, Liverpool, 19.

1930. Peters, Arthur Bowden, F.R.Met.S., Librarian and Curator, Inverness Public Library.

1926. Pilkington, Alan D., Dean Wood, Newbury, Berks.

1934. Pinto, Raimondo N. de, 4 Sloan Street, Leith.

1921. Porter, Mrs Blackwood, West Lodge, North Berwick.

1901.*Portland, His Grace The Duke of, K.G., Welbeck Abbey, Notts.

1927. Prentice, James, Athelstane, Crieff, Perthshire.

1911.*Preston, Frank A. B., M.R.S.I., M.S.A., Druimdarroch, 27 Ferguson Avenue, Milngavie.

1906. Pringle, Robert M., Spottiswoode, Barnton Park, Davidson's Mains, Edinburgh, 4.

1924. Pullar, Peter MacDougall, 24 St Ronan's Drive, Shawlands, Glasgow, S. 1.

1926. Purdie, Thomas, Aucheneck, Killearn, Stirlingshire.

1924. Purves, John M., M.C., 1 West Relugas Road, Edinburgh, 9.

1928. Quig, Rev. Gordon, M.A., B.D., The Manse, Monifieth, by Dundee.

1932. Quig, James Symington, Ravenscraig, Falkirk.

1921. Rae, John N., S.S.C., 2 Danube Street, Edinburgh, 4.

1932. Ramsay, David George, M.A., B.Sc., Rector of Kirkcudbright Academy, Skair Kilndale, Kirkcudbright.

1924.*Ramsay, Douglas M., J.P., Bowland, Galashiels, Selkirkshire.

1928. Randall-MacIver, David, M.A., D.Sc., c/o Messrs Brown Shipley & Co., 123 Pall Mall, London, S.W. 1.

1908.*Rankin, William Black, of Cleddans, 2 Rothesay Terrace, Edinburgh, 3.

1935. Rankine, William Francis, Badshot Lea, Surrey.

1927. Ratcliffe, Joseph Riley, M.B., C.M. (Edin.), F.R.S.E., 22 Wake Green Road, Moseley, Birmingham.

1906. Raven, Alexander James, c/o The Bank of Adelaide, 11 Leadenhall Street, London, E.C. 3.

1936. Reed, Rev. James H., Wesleyan Parsonage, Retief Street, Potchefstroom, Transvaal, South Africa.

1909. Reid, Alphonso Stodart, J.P., Bank of England, Manchester, 2.

1897.*Reid, The Right Rev. Edward T. S., M.A., D.D., Bishop of St Andrews, Castlebrae, Auchterarder.

1931. Reid, John, J.P., 27 Lintrathen Gardens, Dundee.

1932. Reid, William, M.B.E., D.L., J.P., 8 Douglas Terrace, West Ferry, Angus.

1931. Renilson, John, Queen Mary's House, Jedburgh.

1926. Reoch, John, Hawthornden, Erskine Road, Whitecraigs, Renfrewshire.

1935. Rice, D. Talbot, M.A., B.Sc., Professor of Fine Art, Edinburgh University, 2 Moray Place, Edinburgh, 3.

1928.*Richardson, Francis, Blairforkie, Bridge of Allan.

1912.*Richardson, James S., Inspector of Ancient Monuments, H.M. Office of Works, 122 George Street, Edinburgh, 2,—*Curator of Museum.*

1923. Richardson, John, W.S., 28 Rutland Square, Edinburgh, 1.

1928. Richardson, John, Solicitor, The Hollies, Musselburgh.

1935. Richmond, Ian A., M.A., F.S.A., Lecturer in Roman-British Archæology, University of Durham, Armstrong College, Newcastle-upon-Tyne, 2.

1919. Richmond, O. L., M.A., Professor of Humanity, University of Edinburgh, 5 Belford Place, Edinburgh, 4.

1929. Rideout, Eric Hardwicke, M.A., B.Sc., A.I.C., Thelwall Lea, near Warrington, Lancashire.

1925. Ritchie, Professor James, M.A., D.Sc., F.R.S.E., Natural History Department, The University, Edinburgh, 31 Mortonhall Road, Edinburgh, 9.

1922. Ritchie, William Muir, 11 Walkinshaw Street, Johnstone, Renfrewshire.

1907. Robb, James, LL.B., LL.D., 26 Ormidale Terrace, Edinburgh, 12.

1933. Robb, James A. T., 128 Beechwood Gardens, Ilford, Essex.

1933. Roberts, Fergus, Joint Town Clerk, Kirkden, Kirktonhill, Dumbarton.

1926. Robertson, Alexander D., M.A., 30 Station Road, Carluke, Lanarkshire.

1927. Robertson, Rev. Archibald E., M.A., B.D., 17 Cluny Gardens, Edinburgh, 10.

1935. Robertson, Rev. Charles P., M.A., "Norwood," 41 Queen Mary Avenue, Glasgow, S. 2.

1926. Robertson, George S., M.A., The Cottage, Viewfield Road, Arbroath.

1930. Robertson, James Meiklejohn, Architect, A.R.I.A.S., "Hamelin," 52 Craiglockhart Road, Edinburgh, 11.

1910. Robertson, John, J.P., 21 Lammerton Terrace, Dundee.

1915. Robertson, Robert Burns, M.V.O., Chapter Surveyor, St George's Chapel, Windsor Castle.

1935. Robertson, Ronald Macdonald, W.S., Straloch, Liberton Drive, Edinburgh, 9.

1928. Robertson, Thomas Atholl, Inveratholl, Alderman's Hill, Palmer's Green, London, N. 13.

1905. Robertson, W. G. Aitchison, M.D., D.Sc., F.R.C.P.E., St Margaret's, St Valerie Road, Bournemouth.

1925. Robertson, Walter Muir, M.B., Ch.B., Queen's Hotel, Helensburgh.

1927. Robertson, William Cormack, 8 Plewlands Gardens, Edinburgh, 10.

1914. Robison, Joseph, 14 Castle Street, Kirkcudbright.

1934. Roderick, H. H., 12 Battlefield Avenue, Glasgow, S. 2.

1925. Roger, George Guthrie, M.A., B.Sc., 3 Myrtle Terrace, East Newport, Fife.

1928. Rogerson, Rev. Charles, M.A., Villa Roma, Sandown Road, Shanklin, Isle of Wight.

1923. Rolland, Miss Helen M., 6 Murrayfield Drive, Edinburgh, 12.

1934. Rosenbloom, Isaac, 20 Shandwick Place, Edinburgh, 2.

1924. Ross, Donald, M.B., Tigh-na-Linne, Lochgilphead, Argyll.

1929. Ross, James, 10 Midmar Gardens, Edinburgh, 10.

1922. Ross, Major John, Euroa, Langbank.

1928. Ross, John D., LL.D., 8736 97th Street, Woodhaven, N.Y., U.S.A.

1926. Ross, Dr Winifred M., Auchendean, Dulnain Bridge, Inverness-shire.

1927. Rowatt, Thomas, Director, Royal Scottish Museum, Spottiswoode, Colinton.

1915. Rusk, J. M., O.B.E., J.P., S.S.C., Clinton House, Whitehouse Loan, Edinburgh, 10.

1936. Russell, Arthur W., M.A., W.S., 25 Hope Terrace, Edinburgh, 10.

1930.*Russell, David, LL.D., Rothes, Markinch, Fife.

1937. Russell, James Anderson, M.A., Ph.D., "Alderwood," Bearsden, Dunbartonshire.

1914. Russell, John, 2 Brunton Place, Edinburgh, 7.

1923. St Vigeans, The Hon. Lord, LL.D., 15 Grosvenor Crescent, Edinburgh, 12—*Vice-President.*

1925.*Salvesen, Iver R. S., 6 Rothesay Terrace, Edinburgh, 3.

1930.*Salvesen, Theodore E., F.R.S.E., 37 Inverleith Place, Edinburgh, 4.

1934. Samson, David Thomas, D.L., Old Cullen, Cullen, Banffshire.

1930. Sanderson, Kenneth, W.S., 5 Northumberland Street, Edinburgh, 3.

1930. Scarth, Henry W., East Bank, Bowden, St Boswells.

1928. Schleicher, Charles, Attaché au Ministère des Affaires Etrangères, Trésorier de la Société Préhistorique Française, 9 rue de Verneuil, Paris—VIIe.

1936. Scholes, W., M.A., Senior History Master, The Abbey School, Fort Augustus.

1910.*Scobie, Major Iain H. Mackay, 1st Seaforth Highlanders, 1 Coates Place, Edinburgh, 3.

1926. Scott, Douglas H., M.B., Ch.B., 5 King's Court, Wimbledon, London, S.W. 19.

1935. Scott, Rev. James G. Dawson, Manse of Logiealmond, Perthshire.

1935. Scott, Laurence Gray, Vingolf, Lerwick, Shetland.

1921.*Scott, R. L., 11 Newark Street, Greenock.

1936. Scott, W. Dawson, County Road Surveyor, Kirkwall, Orkney.

1931. Scott, W. Lindsay, D.S.C., B.A., 7 Lambolle Road, Hampstead, London, N.W. 3.

1931. Scott Moncrieff, Miss Martha C., The Castle, Elie, Fife.

1915. Scrymgeour, Norval, Fellow of the Institute of Journalists, Summerfield, Longforgan, by Dundee.

1930. Serjeantson, R. J., Troughend, Brora, Sutherland.

1929. Seton-Anderson, James, "Woodlea," 15 Moffat Road, Dumfries.

1913.*Shand, J. Harvey, W.S., 38 Northumberland Street, Edinburgh, 3.

1927.*Sharp, Andrew M., 8 South Inverleith Avenue, Edinburgh, 4.

1917. Shaw, Julius Adolphus, Mus.D. Trin. Coll. Dublin, L.Mus., T.C.L., Beech Field, 169 Withington Road, Whalley Range, Manchester, 16.

1918. Shaw, Mackenzie S., W.S., 1 Thistle Court, Edinburgh, 2.

1932. Shaw, Neil, General Secretary and Organiser, *An Comunn Gaidhealach*, Octavia Buildings, Kilmacolm.

1930. Shaw, R. Cunliffe, M.Sc., F.R.C.S.Eng., L.R.C.P. (London), 24 Ribblesdale Place, Preston, Lancashire.

1917. Shaw, William B., F.R.Hist.Soc., Honorary Curator of the Collections of the Presbyterian Historical Society of England, London, 56 Sandy Lane, Stretford, Manchester.

1933. Shepperd, C. B., M.A. (Oxon.), B.Sc. (Oxon.) (no address).

1917. Shiells, Courtenay John, C.A., 17 Melville Street, Edinburgh, 3.

1930.*Simpson, Miss Margaret E. Barbour, M.A., Assistant Inspector of Ancient Monuments for Scotland, 43 Manor Place, Edinburgh, 3.

1926. Simpson, Richard J., Hermitage, Corstorphine, Edinburgh, 12.

1936. Simpson, Victor Alexander, Structural Engineer, 66 Albion Road, Edinburgh, 7.

1919. Simpson, William Douglas, M.A., D.Litt., Librarian, Aberdeen University, The Chaplains' Court, Chanonry, Old Aberdeen.

1931. Simpson, W. N., 31 Broomley Drive, Giffnock, Renfrewshire.

1908. Sinclair, Colin, M.A., Ph.D., F.R.I.B.A., St Margaret's, Ralston Avenue, Crookston, Glasgow, S.W. 2.

1919. Sinclair, John, Fallin Public School, Stirling.

1926. Sinclair, John H., 204 West Regent Street, Glasgow.

1909. Skinner, Robert Taylor, M.A., F.R.S.E., 35 Campbell Road, Edinburgh, 12.

1928. Slater, John Murray, Provost of Kirkwall, Vogablik, Kirkwall.

1929. Slimon, Alexander M., Moyhall, Kirkintilloch.

1928. Smallwood, Robert Henry Gough, Banker, 5 Carlton Villas, Wrexham, N. Wales.

1922. Smeall, Thomas Young, Solicitor, Castlewood, Jedburgh.

1934. Smellie, Thomas, Architect, 46 Portland Road, Kilmarnock.

1933. Smith, Alexander, M.A., F.R.S.A., 34 Holly Avenue, Jesmond, Newcastle-upon-Tyne.

1930. Smith, Miss Annette, 11 Midmar Gardens, Edinburgh, 10.

1931. Smith, Rev. Colin, M.A., Free Church Manse, Campbeltown.

1910. Smith, David Baird, C.B.E., LL.D., 5 Kirklee Terrace, Glasgow, W. 2.

1933. Smith, David G., M.A., Geography and Secretarial Master, Edinburgh Ladies College, Queen Street, Edinburgh, 2.

1925. Smith, John, 14 Viewforth Gardens, Edinburgh, 10.

1934. Smith, John, B.Sc., Chief Conservator of Forests, Sudan Government, Birkhill, Coalburn, Lanarkshire.

1936. Smith, John Frederick (Chief Librarian, Liverpool Public Libraries), Tutnal, Gwydrin Road, Calderstones, Liverpool, 18.

1932. Snyder, Professor Franklyn B., A.M., Ph.D., Professor of English, Northwestern University, 1624 Ashland Avenue, Evanston, Illinois, U.S.A.

1921. Soutar, Charles Geddes, F.R.I.B.A., 15 South Tay Street, Dundee.

1935. Souter, George, Drynie, Dingwall.

1928. Spackman, Cyril Saunders, R.B.A., L.R.I.B.A., R.M.S., F.R.S.A., F.R.S.A.I., The Studio, Edridge Road, Croydon, Surrey.

1910.*Spencer, Colonel Charles Louis, C.B.E., D.S.O., 5 Great Western Terrace, Glasgow.

1910.*Spencer, John James, 5 Great Western Terrace, Glasgow.

1920. Stephen, Rev. William, B.D., D.D., The Manse, Inverkeithing.

1902. Steuart, James, O.B.E., W.S., 25 Rutland Street, Edinburgh, 1.

1922. Steuart, Mrs Mackenzie, Down, Whimple, Devon.

1930. Stevens, C. E., M.A., Fellow of Magdalen College, Oxford.

1933. Stevenson, Captain Edward Daymonde, M.C., C.V.O., Secretary and Treasurer, The National Trust for Scotland, 4 Great Stuart Street, Edinburgh, 3.

1927. Stevenson, Major Herbert H. M'D., Culter House, Coulter, Lanark.

1937. Stevenson, Rev. James Patrick, B.A., C.F., St Mary's Vicarage, Prince's Road, London, S.E. 11.

1895. Stevenson, John H., M.B.E., K.C., *Marchmont Herald*, 9 Oxford Terrace, Edinburgh, 4.

1913. Stevenson, Norman, Dechmont View, Sandyhills, Shettleston.

1913. Stevenson, Percy R., 7a Young Street, Edinburgh, 2.

1922. Stewart, Andrew, H.M. Inspector of Taxes, 2 Caird Drive, Partick, Glasgow, W. 1.

1922. Stewart, Charles, C.A., Bracken Bruach, Downfield, Dundee.

1925.*Stewart, Ian R. H., 2 Stuart Road, Wimbledon Park, London, S.W. 19.

1917.*Stewart, John Alexander, 104 Cheapside Street, Glasgow.

1929. Stewart, Mrs John A., Tempar, Kinnoull, Perth.

1925. Stewart, Miss Ranolina, 19 Blacket Place, Edinburgh, 9.

1925. Stirling, Colonel Archibald, of Garden, Sandyholes, Kippen, Stirlingshire.

1908. Stirton, Rev. John, C.V.O., B.D., D.D., Delvine, Dreghorn Loan, Colinton.

1925. Storie, William Stevenson, L.A., S.S.C., N.P., 9 Merchiston Crescent, Edinburgh, 10.

1930.*Strathcona and Mount Royal, The Right Hon. Lord, 14 South Audley Street, London, W. 1.

1922. Stringer, E. W. Scobie, M.C.H., M.R.A.S., M.R.S.T., "Twinhills," Portway, Wells, Somerset.

1929. Struthers, Major James G., D.S.C., Bonawe Quarries, Connel, Argyll.

1933. Sturrock, J. Frederick, 417 Blackness Road, Dundee.

1925. Sutherland, His Grace The Duke of, Dunrobin Castle, Sutherland.

1928. Sutherland, J. R., Christian Institute, Hamilton Street, Motherwell.

1923. Suttell, Arnold, L.R.I.B.A., M.Inst.M. & C.Y.E., M.R.S.I., 2 Victoria Avenue, Harrogate, Yorkshire.

1916. Swan, T. Aikman, A.R.I.B.A., 7 St Colme Street, Edinburgh, 3.

1916.*Tait, Edwyn Seymour Reid, Bydin, St Olaf Street, Lerwick, Shetland.

1933. Tait, James, 431 E. Congress Street, Detroit, Mich., U.S.A.

1929. Taylor, Alexander B., M.A., D.Litt., 25 Westfield Road, Broughty Ferry, Dundee.

1927. Taylor, Charles, 13 Westland Drive, Scotstoun, Glasgow, W. 4.

1931. Taylor, Charles Henry, Collegehill House, Roslin, Midlothian.

1917. Taylor, Frank J., 21 Tankerville Terrace, Jesmond, Newcastle-on-Tyne.

1929. Taylor, James, 5604 De Longpre Avenue, Hollywood, California.

1930. Taylor, John, Collegehill House, Roslin, Midlothian.

1902. Thin, Robert, M.A., M.B., C.M., LL.D., 25 Abercromby Place, Edinburgh, 3.

1926.*Thompson, Professor Harold William, A.M., Ph.D., New York State College, Albany, New York State, U.S.A.

1906.*Thomson, David Couper, J.P., D.L., Inveravon, Broughty Ferry.

1920. Thomson, George Clark, Barrister-at-Law, P.O. Box 880, Swift Current, Saskatchewan, Canada.

1913. Thomson, James, The Cedars, 21 Fortis Green, East Finchley, London, N. 2.

1930. Thomson, James Cornwallis, C.A., 35 Saltoun Street, Glasgow, W. 2.

1913. Thomson, John Gordon, S.S.C., 54 Castle Street, Edinburgh, 2.

1927. Thomson, J. F. Gordon, M.A., Advocate, 26 Heriot Row, Edinburgh, 3.

1931. Thomson, J. Miller, W.S., 5 St Colme Street, Edinburgh, 3.

1927. Thomson, Mrs, Callands, West Linton, Peeblesshire.

1937. Thomson, Robert, Ph.D., B.Sc., Assistant Lecturer, Edinburgh University, Crossford, by Dunfermline.

1936. Thomson, Thomas Lauder, M.D., D.P.H., County Medical Officer, Dunbartonshire, Lauderdale, Dumbarton.

1910. Thomson, William N., Architect, Hope Chambers, 52 Leith Walk, Edinburgh, 6.

1911. Thorburn, Lt.-Col. William, O.B.E., Woodville, Annan, Dumfriesshire.

1930. Thorneycroft, Wallace, of Dalrulzion, Chalmington, Dorchester.

1932. Thriepland, Patrick Wyndham Murray, Dryburgh Abbey, St Boswells.

1933.*Thyne, James Cowan, St Helens, Downfield, Dundee.

1930. Tod, Thomas M., West Brackly, Kinross.

1924. Tod, William A., Dunrobin, Belfield Road, West Ewell, Surrey.

1935. Tolland, Rev. James, The Manse, Belmont Church Road, Belfast.

1936. Towill, Rev. Edwin S., M.A., B.D., Chalmers Manse, 27 Windsor Street, Dundee.

1902.*Traill, H. Lionel Norton, F.R.G.S., Capt., 4th Highland Light Infantry, Villa Silvana, Via Romana, Bordighera, Italy.

1917. Traill, William, C.E., J.P., Holland, Papa Westray, Orkney.

1932. Tranter, Nigel G., Mavismeade, 18 M'Donald Place, Edinburgh, 7.

1922.*Trotter, George Clark, M.D., Ch.B. (Edin.), D.P.H. (Aberd.), F.R.S.E., Braemar, 17 Haslemere Road, Crouch End, London, N. 8.

1924. Tullis, James Kennedy, Baingle Brae, Tullibody, by Stirling.

1925. Tulloch, James, M.A., 5 Wilton Gardens, Glasgow, N.W.

1934. Tulloch, Robert G., M.A., c/o Mrs Ross, 17 Dudley Gardens, Edinburgh, 6.

1936. Tunstill, W. H., Monkholme, Corbiehill Road, Davidson's Mains, Edinburgh, 4.

1922. Turnbull, John W., Kilbride, Millhouse, Argyll.

1925. Turner, Fred. A., F.R.Hist.S., Lasswade Cottage, 15 Penwerris Avenue, Osterley, Middlesex.

1917.*Urquhart, Alastair, D.S.O., Bachelors' Club, Piccadilly, London, W. 1.

1921. Urquhart, Edward A., 11 Queensferry Street, Edinburgh, 2.

1930. Vale, Thomas H., A.C.A., Pakington House, Rosemary Hill Road, Little Aston, Staffs.

1935.*Valentine, William Harris, The Mansion House, Auchterhouse, by Dundee.

1936. Van Giffen, Professor A. E., Biologisch Archæologisch Instituut, Rijks Universiteit, Portstr. 6, Groningen, Holland.

1920.*Varma, Prof. S. P., M.A., of Robertson College, Jubbulpore, C.P., India.

1933. Veitch, George, C.A., 14 Chalmers Crescent, Edinburgh, 9.

1927. Vernon, Rev. William Frederic, M.A., B.D., Holy Trinity Rectory, Alloway Place, Ayr.

1921. Waddell, J. Jeffrey, I.A., Architect, Caldergrove, Hallside, Lanarkshire.

1934. Waites, James Arthur, A.M.E.E.S., F.R. Asiatic S. (no address).

1928. Walker, Alexander, 424 Great Western Road, Aberdeen.

1928. Walker, Rev. George A. Everett, Minister of Parish of Benholme, Manse of Benholme, Johnshaven, Montrose.

1937. Walker, Ninian, Solicitor, Commercial Bank Buildings, Dunfermline.

1926. Walker, Robert J., M.A., Boroughmuir Secondary School, Viewforth, Edinburgh, 10.

1924.*Walker, W. Glassford, C.A., 2 Denham Green Avenue, Edinburgh, 5.

1926. Walker-Love, Thomas, M.B., Greenbank, Clark Street, Airdrie.

1936. Wallace, David Swan, W.S., 6 Eton Terrace, Edinburgh, 4.

1928. Wallace, James, M.A., Rector of Vale of Leven Academy, "Glenleven," Alexandria, Dunbartonshire.

1936. Wallace, Rev. William Angus, The Manse of Guthrie, by Forfar.

1927.*Wallis, W. Cyril, Assistant Keeper, Art and Ethnographical Department, Royal Scottish Museum, 53 Spottiswoode Street, Edinburgh, 10.

1935. Wardrop, Robert Newlands, B.Com., 15 Bridge Street, Musselburgh.

1919. Warr, The Very Rev. Charles Laing, C.V.O., M.A., D.D., Minister in St Giles Cathedral, Dean of the Most Ancient and Most Noble Order of the Thistle, and Dean of the Chapel Royal in Scotland, 63 Northumberland Street, Edinburgh, 3.

1923. Warrack, Malcolm, 7 Oxford Terrace, Edinburgh, 4.

1932. Wason, C. R., Lecturer in Classical Archæology in the University of Edinburgh, 18 Eglinton Crescent, Edinburgh, 12.

1916. Waterson, David, R.E., Bridgend House, Brechin.

1924. Waterston, Charles B., 25 Howard Place, Edinburgh, 4.

1933. Waterston, Professor David, M.A., M.D., F.R.C.S.E., Bute Professor of Anatomy, 5 Windmill Road, St Andrews, Fife.

1904. Watling, H. Steward, Architect, Plas Cohwy, Gogarth, Llandudno, N. Wales.

1907.*Watson, Charles B. Boog, F.R.S.E., 24 Garscube Terrace, Murrayfield, Edinburgh, 12.

1924. Watson, George Mackie, F.R.I.B.A., 50 Queen Street, Edinburgh, 2.

1913. Watson, G. P. H., F.R.I.B.A., Royal Commission on Ancient and Historical Monuments of Scotland, 27 York Place, Edinburgh, 1.

1922. Watson, Henry Michael Denne, C.A., 12 Henderland Road, Murrayfield, Edinburgh, 12.

1927.*Watson, John Hill, of Grangehill, Beith, Ayrshire.

1908.*Watson, John Parker, W.S., Greystane, Kinellan Road, Murrayfield, Edinburgh, 12.

1930. Watson, Thomas William, J.P., The Schoolhouse, Gullane.

1927.*Watson, William Elder, O.B.E., J.P., Moray Bank, Elgin.

1912. Watson, William J., M.A., LL.D., D.Litt.Celt., F.R.S.E., Professor of Celtic Languages, Literature and Antiquities, University of Edinburgh, 17 Merchiston Avenue, Edinburgh, 10.

1933. Watt, Rev. Douglas W., M.A., The Manse of Pluscarden, Elgin.

1907. Watt, James, LL.D., W.S., F.F.A., 7 Blackford Road, Edinburgh, 9.

1908. Watt, The Very Rev. Lauchlan MacLean, M.A., B.D., D.D., LL.D., Kinloch, Lochcarron, Ross-shire.

1923.*Watt, William J. C., M.B., Ch.B., 71 High Street, Paisley.

1937. Wedderburn, Ernest Maclagan, Deputy Keeper of the Signet, 6 Succoth Gardens, Edinburgh, 12.

1928. Weir, Rev. Harold George Mullo, M.A., The Manse, Dalry, Kirkcudbrightshire.

1925. Weir, James Mullo, S.S.C., 21 Mayfield Terrace, Edinburgh, 9.

1927. Weir, Walter, 18 Cathkin Road, Langside, Glasgow.

1926. Westell, William Percival, F.L.S., M.R.A.I., The Museum, Town Square, Letchworth, Hertfordshire.

1932. Weston, Percy William, F.R.E.S., F.R.G.S., F.R.H.S., F.C.S., F.Z.S., Villa Chapport, Tangier, Morocco.

1925. White, William, Shore Road, Anstruther, Fife.

1903. Whitelaw, Alexander, Gartshore, Kirkintilloch.

1902.*Whitelaw, Charles Edward, F.R.I.A.S., 22 Midmar Gardens, Edinburgh, 10.

1928. Whitelaw, Rev. Herbert A., High Church Manse, 2 Brighton Terrace, Craigmore, Rothesay, Bute.

1909. Whittaker, Charles Richard, F.R.C.S., F.R.S.E., Lynwood, 27 Hatton Place, Edinburgh, 9.

1897. Williams, H. Mallam, J.P., Tilehurst, 34 Southern Road, West Southbourne, Bournemouth, Hants.

1930. Wilson, Arthur, J.P., 6 Saltoun Gardens, Glasgow, W. 2.

1935. Wilson, Arthur W., Fern Bank, Loughborough Road, Kirkcaldy.

1933. Wilson, David, A.R.I.A.S., 15 Prospect Bank Place, Leith, Edinburgh, 6.

1929. Wilson, George Victor, H.M. Geological Survey, 19 Grange Terrace, Edinburgh, 9.

1933. Wilson, James Pearson, Privick Mill, Ayr.

1934. Wilson, Captain Maurice J. H., The Queen's Own Cameron Highlanders, Ashmore, Bridge of Cally, Perthshire.

1932. Wilson, P. Douglas, M.Inst.C.E., Executive Engineer, Public Works Department, Hong Kong.

1927.*Wilson, Robert, 139 Princes Street, Edinburgh, 2.

1923.*Wilson, Rev. S. Gordon F., M.A., B.Litt., A.K.C., F.R.Hist.S., Blean Vicarage, near Canterbury, Kent.

1913. Wilson, Rev. Thomas, B.D., D.D., The Manse of St Mary of Wedale, Stow, Midlothian.

1920. Wishart, David, Pittarrow, Abernethy, Perthshire.

1934.*Wishart, Frederick, 193 Great Western Road, Aberdeen.

1929. Wolfenden, William, J.P., Ardcoil, Kingussie, Inverness-shire.

1936. Wood, William Henry, Missioner to the Deaf, 15 Kilnburn, East Newport, Fife.

1930. Wright, Alexander, L.R.I.B.A., "Creggans," Buchanan Street, Milngavie.

1927. Wright, Rev. William, M.A., B.D., Minister of the Parish of Wardlawhill, 21 Clincarthill, Rutherglen.

1925. Wyness, J. Fenton, A.R.I.B.A., A.I.Archts.Scot., 45 Salisbury Terrace, Aberdeen.

1937. Young, Mrs H. Nugent, 10 Onslow Court, Drayton Gardens, London, S.W. 10.

1933. Young, Robert Storer, J.P., Solicitor, Kinross.

1913. Young, Thomas E., W.S., Auchterarder.

1934. Young, T. P. W., A.R.I.B.A., 95 Bath Street, Glasgow, C. 2.

1937. Young, William Ross, "Drumveigh," Barnton Avenue, Edinburgh, 4.

1924.*Younger, Harry J., 21 Douglas Crescent, Edinburgh, 12.

1929. Younger, Mrs J. P., Arnsbrae, Cambus, Clackmannanshire.

1912.*Yule, Thomas, W.S., 16 East Claremont Street, Edinburgh, 7.—*Vice-President.*

SUBSCRIBING LIBRARIES, ETC.

American Philosophical Society.
Ashmolean Museum, Oxford.
Birmingham Public Libraries—Reference Library.
Carnegie United Kingdom Trust—The Scottish Central Library for Students, Dunfermline.
Chicago University Library, Chicago, U.S.A.
Cleveland Public Library, Ohio, U.S.A.
*Columbia University.
Department of British and Mediæval Antiquities, British Museum.
Detroit Public Library, Detroit, U.S.A.
Dr Hay Fleming Library, The University, St Andrews.
*Faculty of Procurators' Library, Glasgow.
Falkirk Archæological and Natural History Society.
Free Public Library, Boston, Massachusetts, U.S.A.
Harvard College, U.S.A.
Henry E. Huntington Library and Art Gallery, San Marino, California, U.S.A.
Institute of Accountants and Actuaries in Glasgow.
Jesus College, Oxford.
John Rylands Library, Manchester.
Metropolitan Museum of Art, New York, U.S.A.
National Museum of Wales, Cardiff.
New York Public Library, New York.
Pennsylvania Historical Society, Philadelphia, U.S.A.
Public Library, Aberdeen.
Public Library, Dundee.
Public Library of Victoria, Melbourne, Australia.
Reform Club, Pall Mall, London, S.W. 1.
State Historical Society of Wisconsin, Madison, Wisconsin, U.S.A.
*Stornoway Public Library, Island of Lewis.
University College, Dublin.
University Library, Leeds.
University of Michigan, Ann Arbor.
University of Minnesota, U.S.A.
University of Pennsylvania, Philadelphia, Pa., U.S.A.
Victoria University of Manchester.
Yale University Library, New Haven, Connecticut, U.S.A.

LIST OF THE CORRESPONDING MEMBERS

OF THE

SOCIETY OF ANTIQUARIES OF SCOTLAND.

NOVEMBER 30, 1937.

1937. ANDERSON, R. W., Whitestone Knowe, Peebles.
1923. BLACK, GEORGE F., Ph.D., 325 Watson Avenue, Lyndhurst, New Jersey, U.S.A.
1927. BREMNER, SIMON, Mid Town, Freswick, Caithness.
1928. FORTUNE, JOHN ROBERT, Airhouse, Oxton, Berwickshire.
1913. FRASER, JOHN, 2 Gladstone Place, Leith, Edinburgh, 6.
1933. MANN, ALEXANDER, 22 Boyd Street, Laurieston, Falkirk.
1915. MATHIESON, JOHN, F.R.S.E., 42 East Claremont Street, Edinburgh, 7.
1936. MOAR, PETER, Commission Agent, 4 Thorfinn Street, Lerwick, Shetland.
1915. MORRISON, MURDO, Lakefield, Bragar, Lewis.
1931. SMITH, SAMUEL, Mumrills, Laurieston, near Falkirk.
1936. TAIT, DAVID, H.M. Geological Survey, 19 Grange Terrace, Edinburgh, 9.
1921. URQUHART, ANDREW, M.A., J.P. (no address).
1933. YORSTON, JAMES, Hullion, Rousay, Orkney.

LIST OF HONORARY FELLOWS

OF THE

SOCIETY OF ANTIQUARIES OF SCOTLAND,

NOVEMBER 30, 1937.

[*According to the Laws, the number is limited to* TWENTY-FIVE.]

1897.

Sir W. M. FLINDERS PETRIE, D.C.L., LL.D., F.B.A., F.R.S., Edwards Professor of Egyptology in University College, London, W.C. 1.

1908.

Sir ARTHUR JOHN EVANS, M.A., D.C.L., Youlbury, near Oxford.

Professor H. DRAGENDORFF, Freiburg i. Baden, Johan von Weirthstrasse 4.

1919.

LÉON COUTIL, Correspondant du Ministère de l'Instruction Publique, etc., etc., Les Andelys, Eure, France.

5 RENÉ CAGNAT, Secrétaire Perpétuel de l'Académie des Inscriptions et Belles Lettres, Professeur au Collège de France, Palais de l'Institut (3 rue Mazarine), Paris.

1923.

M. L'ABBÉ H. BREUIL, D.L.C., Professeur au Collège de France et à l'Institut de Paléontologie Humaine, Paris, 52 Avenue de la Motte Piquet, Paris, XVe.

Professor FRANZ CUMONT, 19 Corso d'Italia, Rome.

Sir G. F. HILL, K.C.B., M.A., LL.D., F.B.A., Litt.D., F.S.A., 12 Sussex Place, Regent's Park, London, N.W. 1.

Frank Gerald Simpson, M.A., 45 Fern Avenue, Jesmond, Newcastle-upon-Tyne.

10 Mrs Arthur Strong, C.B.E., Litt.D., LL.D., F.S.A., Life-Fellow of Girton College, Cambridge, and Assistant Director of the British School at Rome, 35 Via Balbo, Rome (22).

A. M. Tallgren, Professeur Universitetet, Helsingfors, Finland.

1926.

Marcellin Boule, Professor in the Muséum National d'Histoire Naturelle, and Director of the Institut de Paléontologie Humaine, 1 rue René Panhard, boulevard Saint-Marcel, Paris 13e.

Professor Dr philos A. W. Brøgger, Bestyrer av Universitetets Oldsaksamling, Tullinlökken, Oslo, Norway.

O. M. Dalton, M.A., F.B.A., Uplands, Bathwick Hill, Bath.

15 Professor Dr Ernst Fabricius, Geheimer Rat, Goethestrasse 44, Freiburg im Breisgau, Germany.

Sir Arthur Keith, M.D., D.Sc., LL.D., F.R.C S. (Eng.), F.R.S., Conservator of the Museum and Hunterian Professor, Royal College of Surgeons of England; Past-President of the Royal Anthropological Institute of Great Britain and Ireland, and of the Anatomical Society. Master of the Buckston Browne Farm, Downe, Farnborough, Kent.

Dr R. Paribeni, Director of the Institute of Archæology of Rome, Museo Nazionale Romano, Rome.

1927.

Don Hermilio Alcalde del Rio, Torrelavega, Santander, Spain.

1931.

Mrs M. E. Cunnington, 33 Long Street, Devizes, Wiltshire.

20 Professor Dr Robert Zahn, Director bei den Staatlichen Museen, Honorar-professor an der Universität, Am Lustgarten, Berlin, C.2.

1933.

Professor Dr phil. Haakon Shetelig, Bergens Museums Oldsamling, Bergen, Norway.

1935.

Professor Gerhard Bersu, Zentraldirektion des Archäologischen Instituts des Deutschen Reiches, Viktoriastrasse 27, Berlin, W. 35.

LIST OF THE LADY ASSOCIATES

OF THE

SOCIETY OF ANTIQUARIES OF SCOTLAND,

NOVEMBER 30, 1937.

[*According to the Laws, the number is limited to* TWENTY-FIVE.]

1900.

Miss M. A. MURRAY, Edwards Library, University College, London, W.C. 1.
2 Mrs E. S. ARMITAGE, M.A., Parkhurst, Middlesbrough.

SOCIETIES, INSTITUTIONS, &c., EXCHANGING PUBLICATIONS.

Architectural, Archæological, and Historic Society of Chester and North Wales.
Belfast Natural History and Philosophical Society.
Berwickshire Naturalists' Club.
Bristol and Gloucestershire Archæological Society.
British Archæological Association.
Buchan Club.
Buteshire Natural History Society.
Cambrian Archæological Association.
Cambridge Antiquarian Society.
Carmarthenshire Antiquarian Society.
Courtauld Institute of Art.
Cumberland and Westmorland Antiquarian and Archæological Society.
Derbyshire Archæological and Natural History Association.
Dumfriesshire Natural History and Antiquarian Society.
Edinburgh Architectural Association.
Edinburgh Geological Society.
Elgin Literary and Scientific Society.
Essex Archæological Society.
Gaelic Society of Inverness.
Glasgow Archæological Society.
Hampshire Field Club and Archæological Society.
Hawick Archæological Society.
Historic Society of Lancashire and Cheshire.
Institute of Archæology, Liverpool.
Kent Archæological Society.
Orkney Antiquarian Society, Kirkwall.
Perthshire Society of Natural Science.
Powys-land Club.
Royal Anthropological Institute.
Royal Archæological Institute of Great Britain and Ireland.
Royal Commission on Ancient and Historical Monuments of Scotland.
Royal Commission on the Ancient and Historical Monuments and Constructions in Wales and Monmouthshire.
Royal Historical Society.
Royal Institute of British Architects, London.
Royal Irish Academy.
Royal Numismatic Society.
Royal Society of Antiquaries of Ireland.
Scottish Ecclesiological Society.
Shropshire Archæological Society.
Society for the Promotion of Roman Studies.
Society of Antiquaries of London.
Society of Antiquaries of Newcastle-upon-Tyne.
Somersetshire Archæological and Natural History Society.
Stirling Natural History and Archæological Society.
Surrey Archæological Society.
Sussex Archæological Society.
Third Spalding Club.
Thoresby Society.
Viking Society for Northern Research.
Wiltshire Archæological Society.
Yorkshire Archæological Society.

Archæological Survey of India.
British School at Rome.
Colombo Museum, Ceylon.
Royal Canadian Institute, Toronto.
Royal Ontario Museum of Archæology, Toronto, 5, Canada.
University Museum, Dunedin, New Zealand.

Foreign Societies, Universities, Museums, &c.

Académie des Inscriptions et Belles Lettres, Paris.
Académie des Sciences d'Ukraïne, Kieff.
Académie Royale Serbe, Belgrade.
Administration des Monuments, Riga, Lettonie.
Alterthumsgesellschaft, Königsberg.
Anthropologische Gesellschaft, Vienna.
Antiquarische Gesellschaft, Zürich.
Archæological Institute of the Imperial University of Kyoto, Japan.

Archäologisches Institut des Deutschen Reiches Römisch-Germanische Kommission, Frankfürt am Main.
Associació Catalana d'Antropologia, Etnologia i Prehistòria, Barcelona Universitat, Spain.
Bosnisch-Herzegovinisches Landes-Museum, Sarajevo.
Bureau of Ethnology, Washington.
California University in Berkeley.
Commissione Archeologica Communale di Roma.
Cornell University Library, Ithaca, New York.
Csl. státni archæologický ústav (Institut archéologique de l'Etat tchécoslovaque) Praha, Republika československá.
Department of Antiquities in Palestine, Jerusalem.
Deutsch-ausländischer Buchtausch, Berlin.
Ecole d'Anthropologie de Paris.
Faculté des Sciences de Lyon.
Field Museum of Natural History, Chicago.
Foreningen til Norske Fortidsmindesmerkers Bevaring.
Göteborg och Bohusläns Fornminnesföreningen.
Göttingen University.
Historische und Antiquarische Gesellschaft, Basel.
Historischer Verein für Niedersachsen.
Institut Archéologique Bulgare, Sofia.
Institut de Paléontologie Humaine, Paris.
Junta Para Ampliación de Estudios—Comision de Investigaciones Paleontológicas y Prehistóricas, Madrid.
Junta Superior de Excavaciones y Antigüedades, Madrid.
Kiel University.
Kongelige Norske Videnskabers Selskab, Trondhjem.
Landesmuseum Nassauischer Altertümer zu Wiesbaden.
Leipzig University.
Musée Archéologique Erasie Majewski de la Société des Sciences de Varsovie, Poland.
Musée d'Art et d'Histoire, Geneva, Switzerland.
Musée Guimet, Paris.
Musée National Suisse à Zürich.
Museum, Bergen, Norway.
Museum of Northern Antiquities, Oslo.
National Bohemian Museum, Prague, Czecho-Slovakia.
National Museum, Zagreb, Yugoslavia.
Nordiska Museet, Stockholm.
Norsk Folkemuseum, Oslo, Norway.
Oslo University, Norway.
Peabody Museum, Cambridge, Mass., U.S.A.
Prähistorische Kommission der Akademie der Wissenschaften in Wien.
Reale Accademia Nazionale dei Lincei, Rome.
Rhein. Landesmuseum, Trier.
Rijks-Museum van Oudheden, Leiden.
Römisch-Germanisches Central Museum, Mainz, Germany.
Royal Academy of History and Antiquities, Stockholm.
Royal Society of Northern Antiquaries, Copenhagen.
Servicio de Investigación Prehistórica de la Excma. Diputación Provincial de Valencia.
Smithsonian Institution, Washington, U.S.A.
Societa Romana di Antropologia, Rome.
Société d'Anthropologie de Paris.
Société des Antiquaires de l'Ouest.
Société Archéologique d'Alexandrie.
Société Archéologique du Midi de la France.
Société Archéologique de Montpellier.
Société Archéologique de Moravie.
Société Archéologique de Namur.
Société des Bollandistes, Brussels.
Société des Sciences de Semur (*Pro Alesia*).
Société Finlandaise d'Archéologie, Helsingfors.
Société d'Histoire et d'Archéologie de Gand.
Société Nationale des Antiquaires de France.
Société Préhistorique Française, Paris.
Société Préhistorique Polonaise.
Société Royale d'Archéologie, Bruxelles.
Stadtisches Museum für Volkerkunde, Leipzig.
Stavanger Museum, Stavanger, Norway.
University Library, Lund, Sweden.
University Library, Tartu, Esthonia.
Upsala University.
Verein für Nassauische Alterthumskunde, Wiesbaden.
Verein von Alterthumsfreunden im Rheinlande, Bonn.
Wiener Praehistorische Gesellschaft.

PERIODICALS.

L'Anthropologie, Paris.
Bulletin archéologique polonais, Warsaw.

LIBRARIES, BRITISH.

Athenæum Club Library, London.
Baillie's Institution, Glasgow.
Bodleian Library, Oxford.

British Museum Library.
Chetham's Library, Manchester.
Church of Scotland College Library, The Mound, Edinburgh.
Free Library, Edinburgh.
Free Library, Liverpool.
Mitchell Library, Glasgow.
National Library of Scotland, Edinburgh.
National Library of Wales, Aberystwyth.
Ordnance Survey Library, Southampton.
Public Record Office Library, London.
Royal Library, Windsor.
Royal Scottish Museum Library, Edinburgh.
Scottish National Portrait Gallery Library.
Scottish Record Office, Historical Department.
Signet Library, Edinburgh.
Trinity College Library, Dublin.
University Library, Aberdeen.
University Library, Cambridge.
University Library, Edinburgh.
University Library, Glasgow.
University Library, St Andrews.
Victoria and Albert Museum Library, London.

LIBRARIES, FOREIGN.

Bayerische Staats-bibliothek, Munich, Bavaria.
Bibliothèque d'Art et d'Archéologie, Université de Paris.
National Library, Paris.
National Library, Vienna.
Newberry Library, Chicago, U.S.A.
Preussische Staatsbibliothek, Berlin.
Public Library, Hamburg.
Royal Library, Copenhagen.
Royal Library, Stockholm.
Sächsische Landes-bibliothek, Dresden.

PROCEEDINGS

OF THE

SOCIETY OF ANTIQUARIES OF SCOTLAND

HUNDRED AND FIFTY-SEVENTH SESSION, 1936–1937

ANNIVERSARY MEETING, 30*th November* 1936.

SIR GEORGE MACDONALD, K.C.B., President,
in the Chair.

Angus Graham and W. J. Gibson were appointed Scrutineers of the Ballot for Office-Bearers.

The Ballot having been concluded, the Scrutineers found and declared the List of the Council for the ensuing year to be as follows:—

President.

Sir GEORGE MACDONALD, K.C.B., LL.D., D.Litt., Litt.D., F.B.A.

Vice-Presidents.

Sheriff C. H. BROWN, K.C.
THOMAS YULE, W.S.
Professor T. H. BRYCE, M.D., LL.D., F.R.S.

Councillors.

The Hon. Sir HEW H. DALRYMPLE, K.C.V.O. | *Representing the Board of Trustees.*
KENNETH SANDERSON, W.S. | *Representing the Board of Trustees.*
Brigadier-General Sir ROBERT GILMOUR, Bart., C.B., C.V.O., D.S.O.
IAN C. HANNAH, M.P., F.S.A.
The Hon. LORD ST VIGEANS, LL.D.
Colonel CHARLES L. SPENCER, C.B.E., D.S.O.
Brigadier-General E. CRAIG-BROWN, D.S.O.
Sir FRANCIS J. GRANT, K.C.V.O., LL.D., Lord Lyon King of Arms.
Rev. WILLIAM BURNETT, B.D.
W. G. C. HANNA, O.B.E., C.A.
W. DOUGLAS SIMPSON, D.Litt.

Secretaries.

DOUGLAS P. MACLAGAN, W.S. | W. MACKAY MACKENZIE, D.Litt.

For Foreign Correspondence.

Professor V. GORDON CHILDE, D.Litt. | Professor W. M. CALDER, M.A., LL.D., F.B.A.

Treasurer.

J. BOLAM JOHNSON, C.A.

Curators of the Museum.

JAMES CURLE, LL.D., W.S. | JAMES S. RICHARDSON.

Curator of Coins.

ROBERT KERR, M.A.

Librarian.

ALEXANDER O. CURLE, C.V.O., LL.D.

Ex Officio.

JOHN A. INGLIS, K.C. *Representing the Treasury.*

On the recommendation of the Council, PETER MOAR, Commission Agent, Lerwick, Shetland, and DAVID TAIT, H.M. Geological Survey, 19 Grange Terrace, Edinburgh, 9, were elected Corresponding Members.

A Ballot having been taken, the following were elected Fellows:—

WILLIAM ARCHIBALD BALLANTINE, P.A.S.I., Chartered Surveyor, 2 Balmoral Place, Stirling.
JAMES BARNETSON, J.P., Georgemas, Halkirk, Caithness.
J. MCLINTOCK BOWIE, F.R.I.B.A., Crofthill, Dumfries.

JAMES HUTCHISON BRYCE, Searcher of Records, 22 West Mayfield, Edinburgh, 9.

JAMES EWEN CABLE, M.B., Ch.B., D.P.H., 53 East High Street, Forfar.

WILLIAM F. CUTHBERTSON, Librarian, The Public Library, Hawick. Leaburn, Hawick.

WILLIAM T. DAVIDSON, 36 Woodstock Road, Aberdeen.

JAMES COUTTS DUFFUS, Claverhouse Mansion, near Dundee, Angus.

DONALD GILLIES, Culduie, Applecross, Ross-shire.—c/o Radford, 5 St Cuthbert's Villas, Haybridge, Wells, Somerset.

WILLIAM ROBERT HALL, J.P., Bank Manager, The Shieling, Cramond Brig.

GEORGE FREDERICK HOY, Secretary, The St Andrew Society, 104 Findhorn Place, Edinburgh, 9.

J. NOEL JOHNSTON, Hon. Secretary, Montrose Natural History and Antiquarian Society, 1 Panmure Place, Montrose.

Miss BARBARA LAIDLER, Orchard End, Roseacre Lane, Bearsted, Kent.

Mrs AGNES MCLAREN LOCKHART, 16 Broompark Drive, Dennistoun, Glasgow, E. 1.

DAVID MURRAY LYON, M.D., Druim, Colinton.

WILLIAM KIRK LYON, W.S., 21 Lynedoch Place, Edinburgh, 3.

Rev. DONALD MACCUISH, M.A., The Manse, Isle of Iona, Argyll.

D. R. MACFARLANE, Observatory Boys' High School, Mowbray, Cape, South Africa.

ROBERT C. NESBITT, of Nisbet House, Duns.—26 Tregunter Road, London, S.W. 10.

DONALD LOUIS NICHOLAS, M.A., Pine Lodge, Stanley Avenue, Higher Bebington, Cheshire.

W. DAWSON SCOTT, County Road Surveyor, Kirkwall, Orkney.

VICTOR ALEXANDER SIMPSON, Structural Engineer, 66 Albion Road, Edinburgh, 7.

Rev. WILLIAM DALE STEWART, B.Litt.(Oxon), Lecturer in Economics, Hawkstone House, Stafford.

Professor A. E. VAN GIFFEN, Biologisch-Archaeologisch Instituut, Rijks-Universiteit, Portstr 6, Groningen, Holland.

Rev. WILLIAM ANGUS WALLACE, The Manse of Guthrie, by Forfar.

The President read the list of Fellows deceased since the last Annual Meeting:—

	Elected.
Miss ALICE BLANCHE BALFOUR, Whittingehame, Haddington	1923
R. B. JARDINE BINNIE, Old Place, Hampton Court	1919
ADAM CAIRNS, 21 Monreith Road, Newlands, Glasgow	1929
JOHN MACLEOD CAMPBELL, The Captain of Saddell Castle, Glen Saddell, by Carradale, Argyll	1933
HENRY COATES, Rydal, Wheatridge Lane, Torquay. (Life Member)	1916
RICHMOND INGLIS COCHRANE, 26 Abercromby Place, Edinburgh	1923
Rev. JOHN L. DINWIDDIE, M.A., D.D., The Manse, Ruthwell, Dumfries	1936
JOHN DOUGLAS, 6 St Mary's Grove, Barnes Common, London. (Life Member)	1911

	Elected.
RICHARD VERNON FAVELL, M.R.C.S., L.R.C.P., Penberth, St Buryan, S.O., Cornwall	1922
WALTER E. GAWTHORPE, 18 Dornton Road, South Croydon	1911
JOHN GIBSON, F.S.A., F.G.S., Hallgarth House, Hexham, Northumberland	1920
THOMAS S. G. HALCROW, of Uitenhage, South Africa	1933
HUGH HANNAH, Solicitor, 6 St Bernard's Crescent, Edinburgh	1922
WILLIAM HARVEY, J.P., Nethercrag, 71 Blackness Avenue, Dundee	1905
CHARLES R. A. HOWDEN, Advocate, Sheriff-Substitute of Inverness, Elgin, and Nairn, Sheriff Court, Elgin	1889
ANDREW HUNTER, 48 Garscube Terrace, Edinburgh	1910
WALTER HUME KERR, M.A., B.Sc., F.R.S.E., Glenfriars, Jedburgh, Roxburghshire	1927
ERNEST H. LAMB, M.A.(Hons.), Rector of Lanark Grammar School, The Rectory, Lanark	1920
DONALD A. MACKENZIE, 19 Merchiston Crescent, Edinburgh	1918
MURDO TOLME MACKENZIE, M.B., Scolpaig, Lochmaddy, North Uist	1910
HUGH DUFF MACWILLIAM, 65 Lissenden Mansions, London	1931
HAMILTON CLELLAND MARR, C.B., C.M., M.D., H.M. Commissioner of Control, Lieut.-Col. R.A.M.C., 10 Succoth Avenue, Murrayfield, Edinburgh	1921
Rev. WILLIAM MOORE, M.A., 63 Old Dumbarton Road, Glasgow	1933
Major-General Sir WALTER OGILVIE, K.B.E., C.B., C.M.G., 3 Spylaw Road, Edinburgh, 10	1932
JOSEPH PATRICK, M.A., C.A., Macdonallie, Lochwinnoch	1919
ALEXANDER POLSON, 6 East Caiystane Road, Edinburgh	1925
Sir ROBERT SANGSTER RAIT, K.B.E., D.L., LL.D., Principal of Glasgow University, 13 The University, Glasgow	1906
WILLIAM SCOTT, late Curator, Barnbougle Castle, 16 Alderbank Place, Edinburgh	1933
Miss ANNIE STEEL, L.L.A., The Croft, Annan	1935
GLEN A. TAYLOR, M.I.Mech.E., F.S.A., 63 Lewis Road, Neath, Glamorganshire	1927
Rev. W. MAGEE TUKE, Kilmore, Bridge of Allan	1934
JOHN WARRACK, LL.D., 13 Rothesay Terrace, Edinburgh. (Life Member)	1917
J. R. M. WEDDERBURN, M.A., W.S., 3 Glencairn Crescent, Edinburgh	1879

The Meeting resolved to record their sense of the loss the Society had sustained in the death of these Members.

The President, Sir George Macdonald, K.C.B., delivered the following Anniversary Address:—

Once again, and much more quickly than some of us would have wished, the rolling months have brought round the Festival of our Patron Saint, and it falls to me as your President to pass in brief review the

work and the happenings of the session that has just closed. You have already paid a silent tribute to the memory of those whom death has removed from our Fellowship, and you will not have failed to note that the list included the names of two of those whom but a short year ago you re-elected to the Council. Deeply as we regret such inevitable losses, it is our duty as members of a corporate body to keep our eye steadily on the future, and to see to it that the gaps in our ranks are not allowed to remain unfilled. In this respect 1935–36 has been fairly satisfactory. Although the returns are not yet complete, I understand that our total strength remains about the same, with perhaps a very trifling downward inclination—1037 as against 1047.

To be stationary, however, is not enough. We must endeavour to advance. You will have observed that the flight of time is having the same effect upon our *Proceedings* as it sometimes has upon individuals. Each successive issue tends to be bulkier than its immediate predecessor. The cost of production has increased, so that the strain on our financial resources is growing steadily. Hitherto we have managed to keep our heads above water, but it would be idle to pretend that our Treasurer has not sometimes had his anxious moments. We ought to strive for such an accession to our numbers as would give him an easy mind. Indeed, I should like to see our regular income reach a figure which would open up the possibility of doing more in the way of subsidising publication than we have been able to do hitherto. What I am thinking of is occasional monographs, too lengthy and too elaborate for inclusion in our ordinary volume. The Society has already one or two successful ventures of the kind to its credit. Nor has anything within my own recollection done more to enhance its reputation abroad than the fact that it stood sponsor for *A Roman Frontier Post*.

This is one of the many lessons that we might with advantage learn from our colleagues in London and on the other side of the North Sea. It was impressed upon me afresh last summer when I was reading the splendid account of Verulamium by Dr and Mrs Wheeler, and again the other day when I was looking through a large, well-printed, and well-illustrated quarto which has just been presented to the Library by our distinguished Honorary Fellow, Professor Fabricius. It contains an account of all that is known regarding the bath-buildings at what was once the great Roman Spa of Badenweiler. I knew, of course, that in addition to their annual *Bericht* the Römisch-Germanische Kommission were issuing a series of such special studies, some prehistoric and others Roman. I was, however, hardly prepared to find that this was the twelfth that had appeared since 1928. That is a fine achievement,

dwarfing into insignificance the slim Index which represents our own modest *πάρεργον* for the corresponding period. At the same time I should be sorry to disparage the Index. Slim as it is, I am sure that any of you who have had occasion to use it will agree that it is, as I predicted, serviceable.

Moreover, if our *πάρεργα* make but an indifferent showing in such a context, our staple this year need shrink from comparison with none. The new volume of the *Proceedings*, an advance copy of which is now upon the table, is well up to the usual standard, and the Editor has succeeded in catering for a great variety of tastes. Prehistorians will find much to interest them in papers dealing with microliths from Banchory, with Mr Calder's acute identification of the well-known "Dwarfie Stane" as the first authentic example of a British rock-cut tomb, with the excavation of yet another Rousay cairn by Dr Callander and Mr Walter Grant, with "Bronze Age" burials in various parts of the country, notably the cemetery at Loanhead of Daviot, and with that strange old world of Shetland of which we have lately been vouchsafed a glimpse through the labours of Mr A. O. Curle. Later, in terms of development, though not necessarily in point of time, are the zoomorphic penannular brooches, of which we have heard something through Mr Kilbride-Jones.

From the obscurity of this twilight the reader can pass to the dim dawn of history with the Manor Water Stone and the Liddesdale Stone, two notable additions to the earliest Christian monuments of Scotland. If he is philologically inclined, he will find matter for reflection in the fresh suggestions advanced by Professor Macalister for the interpretation of the inscriptions on one or two of the more or less contemporary stones that have long been familiar. He can then travel by way of the cross-fragments in Old Luce Church to the Cathedral burial-ground at St Andrews, which can boast of what is undoubtedly one of the most remarkable collections of churchyard memorials in our islands, now for the first time adequately deciphered and described. The mention of a cathedral suggests ecclesiastical architecture, and for students of that fascinating subject there is Mr Hannah's discussion of screens and lofts in Scottish churches and Mr Hunter's note upon Falkirk.

Harking back to what were presumably Pagan days, I would refer to Mr Curle's final report on his discovery of a Viking settlement at Jarlshof, a discovery which has attracted much attention in Scandinavia and which has also paved the way (if rumour can be trusted) for similar discoveries in the sister group of islands. It was my privilege to be on the spot for some weeks while the exploration of these Norse houses

was in progress. I was there, in fact, when their true character first began to be suspected. To me the enigma presented by their ruined foundations appeared to be as nearly insoluble as anything of the kind could very well be. The bringing together of the pieces of the jig-saw puzzle, and the evolving of a satisfactory and consistent account of the vicissitudes which the settlement had undergone, may fairly be described as a triumph that could only have been accomplished by a rare combination of patience and archæological insight. It emphasises once again the immense importance of securing skilled and constant supervision when any undertaking of the sort is afoot. Had a less acute or a less conscientious observer been in charge, it is virtually certain that the remains would have been ruthlessly shovelled aside as meaningless rubbish. From the Norsemen to the Normans is an easy and natural transition, but we shall have to wait a little for Dr Douglas Simpson's complete report upon the Doune of Invernochty.

Among the other papers there are three which I would group together as constituting a response—I am afraid I cannot flatter myself by thinking it more than fortuitous—to the appeal I made last year for younger contributors. The first of these is by a civil servant, who in the far-off Federated Malay States keeps in touch with the homeland by studying Scottish numismatics. The other two are by leading members of the small band of experts who for some years past have been doing such admirable work on the Roman frontier between Tyne and Solway. Mr Richmond, to be sure, is not exactly a newcomer. If I remember aright he read us a paper while he was still an undergraduate at Oxford. Now he has begun to make raids into Caledonia, and his description of the first one of these in which he has used the spade is a striking vindication of the acumen of the little coterie of military officers who pursued the study of Roman Scotland with such keenness in the eighteenth century—Melville and Roy and Shand. Mr Birley in a most scholarly communication has shown good grounds for believing that Cocceius Firmus, the Roman centurion who dedicated the famous set of altars buried at Auchendavy, hailed from the Danube valley, and that he is to be identified with a man of that name who has the distinction of having supplied the *Digest* with a leading case.

I wish I could have stopped at that point. But what I can only regard as a strange aberration on Mr Birley's part compels me to go further. Quite unnecessarily, as I think, he has revived a fiction that may get a new lease of life unless a protest is promptly made. Following Sibbald and Sandy Gordon, he has incorporated the Kingdom of Fife in the Roman Empire. I may find it desirable to deal with the theory

more fully in the course of the winter or spring. Meanwhile, however, I will content myself with a warning to any Scottish archæologists who may feel tempted to pay heed to Mr Birley's implicit appeal that they should take spade and pick and make search for Roman salt-mines in Fife. I would say to them what the old Aberdeen professor said a hundred years ago to a Duke of Richmond who insisted on his workmen digging for coal in a spot that was geologically impossible: "Ye'll niver find fat ye're seekin', though ye howk till ye hear the deil hoastin'."

Thus far I have been speaking of our own publications, strictly so called. I feel, however, that we can claim something more than an outside interest in a highly important contribution which has just been made to the literature of what an American scholar once called "the lost centuries of English history." The Rhind Lectures, delivered last November by Mr E. T. Leeds, Keeper of the Ashmolean Museum, were published the other week by the Oxford Press in a comely volume. Mr Leeds is one of the most distinguished of the scholars who are bringing the searchlight of archæology to bear upon the dark period of the Saxon invasions. He has been the champion of views that in some respects run counter to received opinion, and here he gives some of his reasons for the faith that is in him. It would be presumptuous for one who has no expert knowledge of the subject to do more than congratulate him on the promptitude he has shown in making the Lectures available for students at home and abroad. But, incidentally, I can assure him that we all appreciate warmly the tribute which the Introduction pays to the work of the late Professor Baldwin Brown, for half a century one of the most active and most highly esteemed of our Fellows. Within the past few weeks we have been indebted to the same foundation for the privilege of hearing one of the best-known of Continental prehistorians deal with a subject which he has made peculiarly his own. I have reason to know that negotiations for the early issue of Professor Bosch Gimpera's course as an independent book are already in train. Let us hope that all will go smoothly. We were looking forward to having Lord St Vigeans as our next Rhind Lecturer, but to his own and our great disappointment his medical advisers have put the project out of bounds. We can only acquiesce, and at the same time unite in wishing him a speedy and complete restoration to health. Lovers of Old Edinburgh will be pleased to know that we have induced Dr Malcolm to take up the succession.

I turn now to another side of our activities. In 1935–36 various enterprises of a comparatively limited, but nevertheless useful, nature have been carried through by the help of grants from our excavation

fund. Taken in chronological order, the first that calls for mention is my own examination of two of the chief buildings in the Roman fort at Croy Hill. Though it had perforce to be conducted in weather of almost Arctic severity, it produced unexpectedly informative results, which I hope to have the pleasure of summarising for your benefit at the first of our ordinary meetings. Two or three months later, under conditions almost as rigorous, Mr Richmond spent a most useful fortnight reconnoitring the Roman fort which he and Mr James MacIntyre had rediscovered during the previous autumn near Glenalmond. As I have indicated, he managed to put his report into shape in time for it to appear in the current volume. You will see, when you turn to it, that even the few days' digging which he did has thrown new light on the Agricolan occupation. It is his intention to follow up the trail at the earliest opportunity, and I for one will watch his progress with confident anticipation. In summer Mr Calder revisited Orkney and opened three chambered cairns and an Iron Age structure, apparently a potter's workshop, all on Eday or the Calf of Eday. Probably it will not be long before he gives us an account of his experiences. Finally, Mr A. O. Curle, who had been at Oslo attending the Archæological Congress there, along with Professor Childe and Mr Edwards on behalf of our Society, and also as a delegate of the British Government, had no sooner returned than he hurried off to Caithness to excavate a mound that was thought to date from the days of the Norsemen. Exactly what he found in it I am unfortunately unable to tell you. We must wait and hear.

Two other excavations have been organised locally during the year. The first of these was under the auspices of the Dumfriesshire Society, who were fortunate in persuading Mr Birley to supervise the reopening of the site at Birrens. More than forty years have elapsed since Mr Barbour excavated it first, producing the most complete plan of an interior that had yet been worked out in Britain. In the interval great advances have been made in our knowledge of how to attack a problem of the kind, and it was most satisfactory that one so thoroughly equipped as Mr Birley should be on the spot to direct operations. The brief newspaper summary of what he found must have whetted your appetite for fuller details. The main thing it suggested to myself was the desirability of continuing the investigation. Further north, in Aberdeenshire, Dr Douglas Simpson was able to raise funds to meet the cost of cutting exploratory trenches at Normandykes on the Dee. For a long time—nearly a century and a half, if I mistake not—it has been suspected that the entrenchments there were of Roman workmanship. Mr Richmond

and Mr MacIntyre, whose assistance Dr Simpson had invoked, have confirmed the diagnosis, so that Normandykes may now be quite confidently added to the roll of marching-camps that survive to bear witness to the campaigning activities of the invaders in North-Eastern Scotland.

Like our own, the ventures at Birrens and in Aberdeenshire may be classed as co-operative. As usual, however, we have to make grateful acknowledgment of time and money ungrudgingly devoted to the service of archæology by individual Fellows. Mr Walter Grant has once more been busy in Rousay, an island the wealth of whose prehistoric remains seems well-nigh inexhaustible. Again, Mr Wallace Thorneycroft and Professor Childe have excavated a vitrified fort in Argyll, and have, I understand, been rewarded by the recovery of evidence which will go some way towards fixing the chronological place of this particular class of structure. Nor is that the only site which has benefited from the attentions of the Abercromby Professor. I am sure that we may look for at least one interesting communication from him this winter, for we know from his reports on Carminnow and Finavon, to mention only the two most recent examples, how ready he is to share with others any new knowledge he has won. *O si sic omnes!*

There remain the mysterious happenings in the northern isles, to which, greatly daring, I was bold enough to refer, albeit with bated breath, twelve months ago. As to these, I can only tell you that the fog still hangs thick over Orkney, and that it now threatens to extend to Shetland. Hitherto Scottish antiquaries, not to say Scottish taxpayers, have displayed the most exemplary patience in waiting for information. But that cannot endure for ever. I think I ought to warn my good friend, Mr Bushe Fox, that unless the mist lifts soon they may arrange a joint march to London and demand full satisfaction. The procession would naturally be headed by Lyon King, and it would be appropriate that he should bear aloft the blue and white flag of St Andrew, whom we to-day commemorate. Mr Bushe Fox may tell the marchers that the root-cause of the trouble is the inadequacy of his staff. In that event they would be entitled to reply that, if his staff is inadequate, there is all the more reason why he should remember what is said to have been Prince Bismarck's favourite among French proverbs: *Qui trop embrasse, mal étreint.*

At the same time it would be unfair not to admit that we have received one very substantial crumb of comfort. There is now in the Museum a solid and striking proof of the potential importance of what is going on behind the veil. Through the good offices of Mr Richardson we have been able to purchase a singularly fine symbol-stone, discovered

by the Ancient Monuments Department at the Brough of Birsay. That is, indeed, the most notable of the year's accessions. Other important additions have been made through generous donations. Some of these represent the fruits of excavations, like the noble array of "Neolithic" and other pottery unearthed at Clettraval Cairn, North Uist, by Mr Lindsay Scott, and presented to us by the Trustees of Sir Arthur Campbell Orde, or like the relics from Rousay, which we owe to the liberality of Mr Walter Grant. Others have been chance finds, like the cinerary urn from Kirkoswald, gifted by the Marquess of Ailsa, or the grave furniture from Craignish, which was handed over to us by Colonel Gascoigne. Then there is the Liddesdale Stone, which we owe to the kindness of the Buccleuch Estates Company. The Manor Water Stone is safely housed in the Chambers Institute at Peebles, but Mr Grieve, its discoverer, has had an admirable cast made for the National Museum at his own expense. Two antiquities that have long been well known have also passed into our keeping—a fine cross-shaft from Eilean Mor, presented to us by Colonel Neill, and a remarkable bronze cauldron, dug up many years ago in Flanders Moss, Stirlingshire, which we have received from Captain Erskine. These are some of the leading items on the list. There are still two which I should like to mention, not merely on their own account, but because each of them possesses an interest which is sentimental in the best sense of the term. Six old Scottish-carved panels of oak have come from the Misses Ross as a memorial of their father's long connection with the Society, while two grandnieces of Mr George Petrie, who did such signal service for the archæology of Orkney seventy or eighty years ago, have added to the magnificent silver hoard of Scandinavian ornaments from Skaill three articles which had come to light after the transference of the rest to the Museum had been completed.

This brief review of the year's acquisitions has necessarily omitted much, but I trust I have said enough to convince you that the inflow of exhibits is being steadily maintained. The national character of the collection is becoming more and more widely recognised, and its value is being correspondingly enhanced. I doubt whether any other country in Europe, unless it be Denmark, can pride itself on the possession of a richer and more representative assemblage of objects so admirably adapted to throw light upon its past, particularly that far distant past of which such fragmentary remains are the only surviving record. For students it is indispensable that these should be gathered in a single centre, for only thus can close comparison be possible. The advantage from the point of view of the general public is equally great, though different in kind. There is a guarantee that the vestiges of Scotland's

history and of her prehistory will be scientifically classified and preserved for all time from deterioration. There ought also to be a guarantee that they will be adequately displayed, so that their significance may make an immediate appeal to even the casual visitor. Unfortunately in this last respect the reality falls a long way short of the ideal.

I have spoken of this before, and I make no apology for emphasising what I previously said. The Museum is sadly handicapped for lack of space. The Royal Commission, which made an inspection of it six or seven years ago, were deeply impressed by the value and interest of its contents. But they were no less deeply impressed by the urgency of the need for more and better accommodation, and they pointed out that the provision of a new Museum might be of real assistance in the solution of other difficulties of an analogous but quite distinct character. They added that, in the circumstances of the time, it was hopeless to expect the Exchequer to supply the necessary funds. To-day the burden that rests on the Exchequer is heavier than it was then. More than ever is it incumbent upon us to look to private sources for aid. That may appear visionary. But this is the age of princely benefactions. Only a week ago we heard of a single gift of two millions being bestowed on the University of Oxford, and nearer home only a few weeks have elapsed since announcement was made of the foundation of an anonymous Endowment Trust of £250,000 for Scotland. Is there no one who will emulate the enlightened liberality of Sir Alexander Grant? He has decided that Scotland shall have a National Library worthy of the name. Is there no one who will accept this splendid challenge in the sphere of munificence, and see to it that Scotland's national antiquities are furnished with a home such as their altogether exceptional character so eminently deserves?

On the motion of Dr James Curle it was resolved that the Address should be printed in the *Proceedings*.

MONDAY, 14*th December* 1936.

SIR GEORGE MACDONALD, K.C.B., President, in the Chair.

On the motion of the Chairman it was unanimously decided that the following Address should be sent to His Majesty the King:—

UNTO THE KING'S MOST EXCELLENT MAJESTY.

May it please Your Majesty:

We, Your Majesty's loyal and dutiful subjects, the President and Fellows of the Society of Antiquaries of Scotland, incorporated by Royal Charter, in terms of which we are privileged to enjoy Your Majesty's Royal Patronage, desire to tender to Your Majesty the sincere expression of our loyal attachment to Your Majesty's Person and Throne. At the same time we beg leave to offer to Your Majesty our dutiful congratulations on Your Majesty's accession, and to add that it is our earnest prayer that Your Majesty, supported by the gracious Presence of Her Majesty the Queen, of whose Scottish nationality we are one and all justly proud, may be long spared in a happy and prosperous reign to maintain and advance the best interests of this great Empire.

Signed in the name and by the authority of the Society of Antiquaries of Scotland, in general meeting assembled, and sealed with the Common Seal of the Incorporation this fourteenth day of December in the year of our Lord One thousand nine hundred and thirty-six.

GEORGE MACDONALD, *President.*
THOMAS YULE, *Vice-President.*
DOUGLAS P. MACLAGAN, *Secretary.*

A Ballot having been taken, the following were elected Fellows:—

ARTHUR CLARK, Municipal Stores Superintendent, 13 Porter Street, East London, South Africa.

HENRY JAMES CRAWFORD, B.A.(Lond.), 38A Netherhall Gardens, Hampstead, London, N.W. 3.

HORACE FAIRHURST, M.A., MacBrayne Hall, 11 Park Circus Place, Glasgow, C. 3.

Captain PETER JOHNSTON-SAINT, M.A., F.R.S.E., 4 Wyndham Place, London, W. 1.

Rev. MALCOLM MACNEILL, The Manse of Kilmodan, Glendaruel, Argyll.

THOMAS LAUDER THOMSON, M.D., D.P.H., County Medical Officer, Dunbartonshire, Lauderdale, Dumbarton.

The following Donations to the Museum received during the recess, from 13th May to 30th November, were intimated, and thanks voted to the Donors:—

(1) By D. BADEN-POWELL, Stone End, Hinksey Hill, Oxford, and CHARLES ELTON, Bureau of Animal Population, University Museum, Oxford.

Pin and Rivet of Bronze, Borer, Pin and Whorl of Bone, and fragments of decorated Pottery from a kitchen-midden at Galson, Lewis. (See subsequent communication by D. BADEN-POWELL and CHARLES ELTON.)

(2) By M. B. DUFF, Chartered C.E., 42 Frederick Street, Edinburgh.

Polished Stone Disc, measuring $4\frac{1}{8}$ inches in diameter and $\frac{3}{8}$ inch in thickness, found in making the dam at the Quarrel Burn Reservoir, Silverburn, Midlothian.

(3) By Colonel DUNCAN F. D. NEILL, through the Commissioners of Works.

Two fragments of a Cross of Schist bearing an inscription on the front and the back in Lombardic letters: (1) part of the head, broken vertically near the middle, measuring $15\frac{1}{2}$ inches in length (fig. 1, Nos. 1 and 1A), and (2) part of the shaft, measuring 7 inches in height, $7\frac{3}{4}$ inches in breadth, and $2\frac{3}{8}$ inches in thickness (fig. 1, Nos. 2 and 2A); the last fragment fits another segment of the Cross (Mus. Cata., IB 143) which has been in the Museum for many years (fig. 1, Nos. 3 and 3A). From Eilean Mor, Argyll.

(4) By CHARLES BIRSS, 127 Marchmont Road, Edinburgh.

Pair of Spectacles with steel and horn frame which belonged to Lord Monboddo.

(5) By D. TAIT, H.M. Geological Survey, Corr. Mem.

Bone Implement of flattened oval section, tapering towards the ends, which are rounded, measuring $3\frac{7}{8}$ inches in length and $\frac{5}{8}$ inch by $\frac{3}{8}$ inch at its broadest part, found 4 feet below the surface in a layer of rusty sand and clay, with pockets of sand and gravel with boulders, 100 yards south of the L.N.E. Railway, on the line of the new north and south road from Calder Road to Saughton Road, near Saughton, Edinburgh.

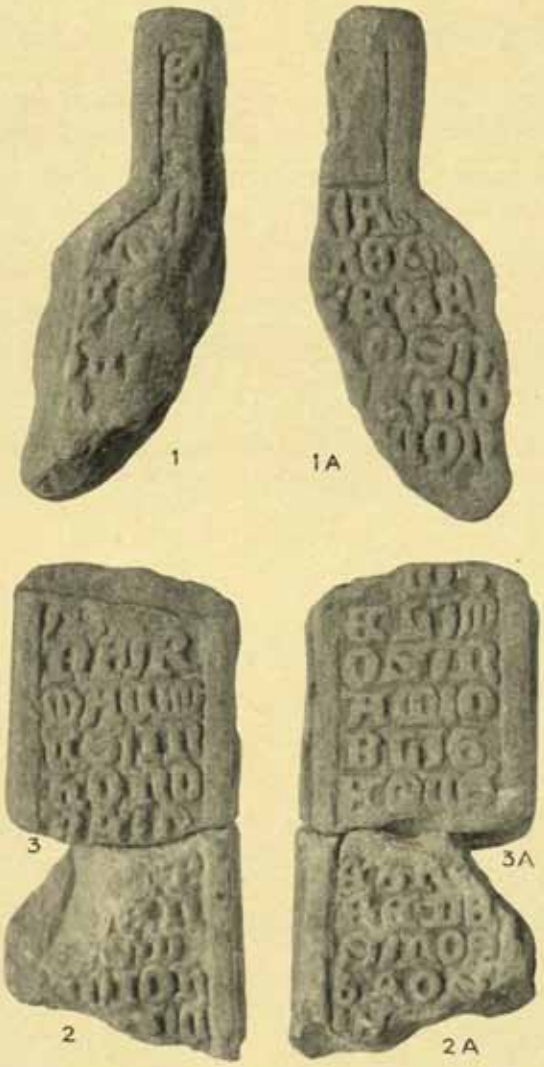


Fig. 1. Fragments of the Head and Shaft of a Cross from Eilean Mor, Argyll.

(6) By R. N. de Pinto, F.S.A.Scot.

Old Bottle of olive-coloured Glass, measuring $8\frac{1}{2}$ inches in height, from Lamb's Building, Waters Close, Leith.

(7) By J. Graham Callander, LL.D., F.S.A.Scot.

Early fifteenth-century carved and pierced Oak Panel, measuring $17\frac{1}{2}$ inches by $9\frac{1}{2}$ inches, bought in Aberdeen.

Thirty-three small, finely finished Arrow-heads of various kinds of stone, from the United States of America: eleven from Oregon, fourteen from Washington, six from Tennessee, and two from Idaho.

(8) By J. M. Corrie, F.S.A.Scot.

Hussif or bag worn under a woman's skirt to hold odds and ends, containing a small pincushion with a few wire-headed pins in it, a pair of scissors, a box to hold thread, and a fleerish made from an old file. From Moniaive, Dumfriesshire.

(9) By Miss Cresser, 40 Victoria Street, Edinburgh.

Wooden Luggie, the body hooped with withies and the edges of the staves feathered. The bottom is hollow and contains peas. The vessel measures $5\frac{3}{8}$ inches in diameter at the mouth and $3\frac{1}{2}$ inches in height, the single handle projecting upwards, $3\frac{1}{4}$ inches above the lip. This was made solely with a knife.

(10) By Miss G. Caton Thompson and Miss E. W. Gardner, the excavators.

Collection of Palæolithic Flint Implements from Kharga Oasis, Egypt, *in situ* in Pleistocene spring deposits.

(11) By the Misses Ross, 14 Saxe-Coburg Place, Edinburgh.

Six Scottish Carved Oak Panels, three bearing thistle, rose, and cone-like designs respectively, and measuring $24\frac{3}{4}$ inches by $11\frac{5}{8}$ inches, $20\frac{3}{4}$ inches by $11\frac{1}{2}$ inches, and $20\frac{3}{8}$ inches by $11\frac{1}{2}$ inches; two with linen-fold carving, imperfect, measuring $24\frac{1}{2}$ inches by 7 inches and $19\frac{5}{8}$ inches by $8\frac{1}{2}$ inches—all early sixteenth century; and one showing a man with a bow and arrow aiming at a bird on the top of a branch of a tree, measuring $17\frac{5}{8}$ inches by $11\frac{1}{2}$ inches—sixteenth century (fig. 2).

(12) By Dr J. J. Galbraith, F.S.A.Scot.

Iron Steelyard with pear-shaped weight. It has two fulcrums, so that the beam can be reversed. In one position it weighs up to 60 lb., and in the other up to 16 lb.

(13) By Angus Graham, F.S.A.Scot.

Three Strike-a-lights formed of flat, oval, water-worn pebbles bearing oblique grooves struck with an iron striker; small Hammer-stone; piece

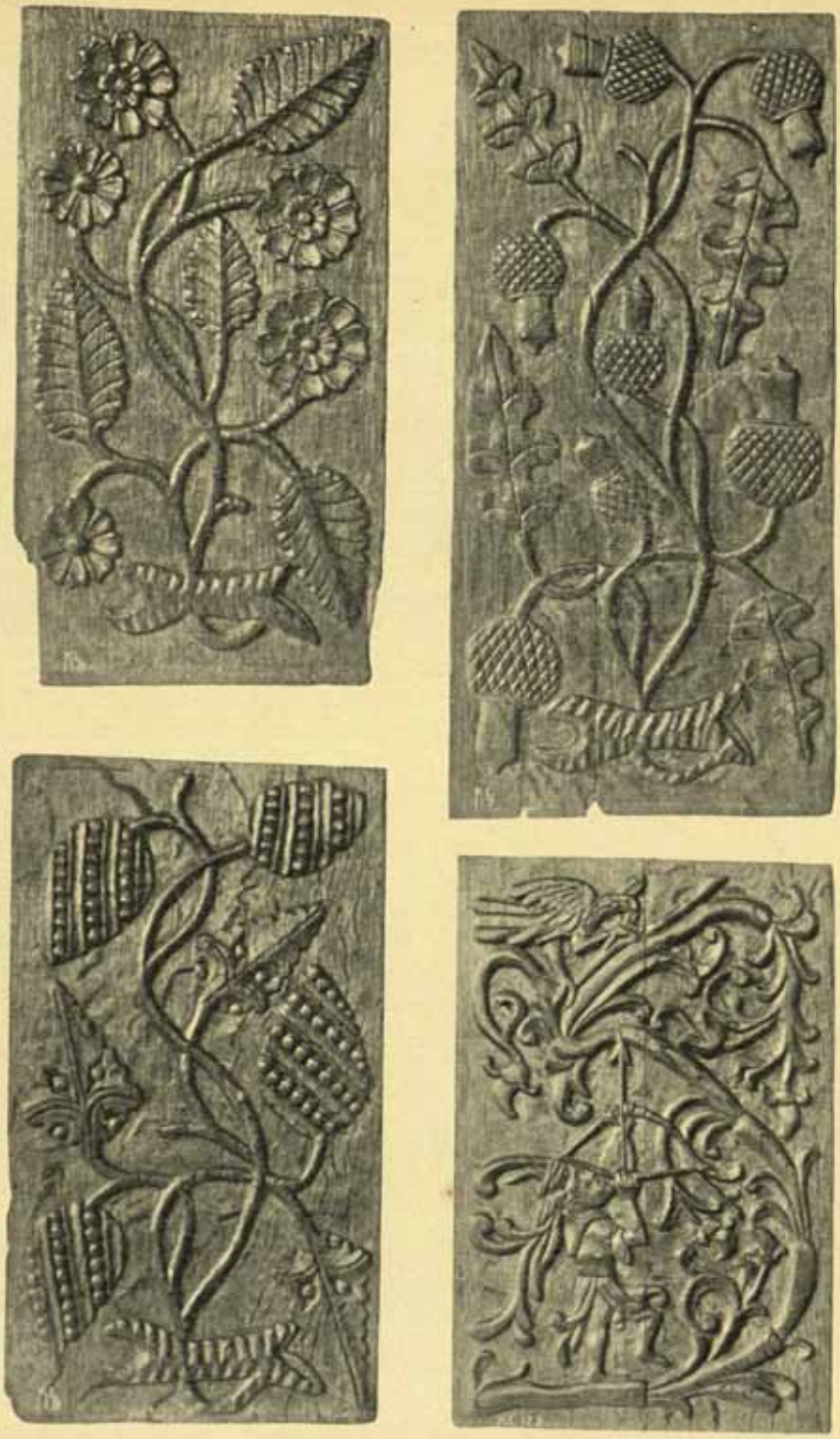


Fig. 2. Carved Oak Panels.

of Slag; cylindrical object of Stone, like a slate-pencil, measuring $3\frac{1}{4}$ inches long, $\frac{9}{32}$ inch in diameter, from the fort of Dun Breac, Skipness, Argyll. (See *Proceedings*, vol. xlix. p. 50.)

Tine of Red Deer, from the Sands near Gullane, East Lothian.

Flint Implements, almost entirely of grey and black colour: Large Core and Scraper with scratches on the under side, axe-like object, broken object with ground arris, four Scrapers, and a Hammer-stone, from Weeting Norfolk. Scraper from Sheringham, Norfolk. Two Scrapers and a Knife from Upper Sheringham. Two Scrapers and a pointed object of creamy colour from Limpsfield, Surrey. Oval worked Implement from Maiden Castle, Dorset. Scraper from Elmham, Norfolk. Scraper from Hove, Sussex. Scraper from Beeston Regis, Norfolk. Scraper from Lyng, Norfolk. Side Scraper from Guist, Norfolk. End Scraper from Twyford, Norfolk. Scraper from Chichester. Fourteen Scrapers, Core, pointed Implement, broken, and leaf-shaped Arrow-head, from Massingham Heath, Norfolk.

Collection of Flint Implements from Palestine.

Ten pieces of Neolithic and later Pottery and two Flint Scrapers from temple excavations at Malta.

(14) By Rev. William Edgar, B.D., Ph.D., F.S.A.Scot.

Collection of Flint Implements from a Tardenoisian site in Ayrshire: Encoche, measuring $1\frac{1}{16}$ inch long; Encoche? measuring $\frac{27}{32}$ inch long; seven narrow battered backs, several imperfect and several with an oblique end, measuring from $\frac{3}{8}$ inch to $\frac{9}{16}$ inch long; three Flakes, measuring $1\frac{1}{16}$ inch, $1\frac{1}{8}$ inch, and $1\frac{1}{4}$ inch long, with slight working; Flake dressed along one side, measuring $1\frac{5}{8}$ inch long; five Scrapers, measuring from $\frac{5}{8}$ inch by $\frac{7}{16}$ inch to $1\frac{1}{8}$ inch by 1 inch; eight Flakes, some perhaps slightly worked; and thirteen Cores.

(15) By James S. Richardson, F.S.A.Scot.

End Scraper or Borer of Cherty Flint, measuring $1\frac{1}{2}$ inch long, and Saw of black Flint, measuring 2 inches long, found on the Glenluce Sands; the saw is broken in two and the parts were found embedded in an old land surface, about 20 feet apart.

Mason's cluring Chisel of Iron, measuring 10 inches long, late seventeenth century, found in centre of a wall in Kilmarnock House, Kilmarnock, now demolished.

Wooden Sash Pulley, early eighteenth century, from Ravelrig House, Balerno.

(16) By Ex-Provost WOLFENDEN, J.P., F.S.A.Scot.

Pair of Brass Scales in wooden case, for weighing gold coins.

(17) By WILLIAM KIRKNESS, F.S.A.Scot.

Salt-holder of red Clay, measuring $9\frac{3}{4}$ inches in height, glazed brown with yellow rings on the upper half.

(18) By WALTER G. GRANT, F.S.A.Scot.

Fesgarin Needle of Horn, measuring $4\frac{3}{4}$ inches in length, and another of Iron, measuring $5\frac{7}{8}$ inches in length, both used in making old Orkney straw-backed chairs, stools, and kubbies (creels). The first was used for sewing with straw and the second with twine.

Three ring-headed Pins, two penannular Ring Brooches and part of another, four Rings, a penannular Armlet and fragments of a Roman Patera, all of Bronze, found in the Broch of Midhowe, Rousay, Orkney. (See *Proceedings*, vol. lxviii. p. 500.)

(19) By JOHN EDMOND, "Wanlock," 8 Gardiner Road, Blackhall, Edinburgh.

Barbed and stemmed Arrow-head of yellow Flint, measuring $1\frac{3}{4}$ inch by $1\frac{1}{8}$ inch, and Bone Pendant of oval shape, with a serrated edge and a rectangular hole in the centre, pierced at the top for suspension, measuring $1\frac{11}{16}$ inch by $\frac{15}{16}$ inch, found in a field at Comie Law, near the entrance to Kellie Castle grounds, Pittenweem, Fife.

(20) By Miss M'ENTIRE, 26 Abingdon Court, Kensington, London, W. 8.

Ram's horn Snuff-mull which belonged to Alexander Farquharson of Invercauld, bound round the mouth by a silver band bearing the name "Alexr. Farquharson," and with another with a small fixed ring attached to it, near the bottom. In the centre of the lid, on an oblong plate, are the initials A. F., and on the hinge plate "Nat. 1743, Ob. 1824, æt $81\frac{3}{4}$."

(21) By Miss MARY ROBERTSON, Dry Wick, Wendover, Bucks.

Mourning Finger-ring of Gold; inside the hoop is the inscription "My beloved Eliza died 15th Decr. 1823," also a cavity with a hinged lid which contains a small plait of human hair.

Tie Pin of Gold with a spherical top covered with small turquoises; the upper half is hinged, and in the cavity within is a small knot of human hair. Its date is known to be 1836.

(22) By George Kinnear, 29 Bridgeton, Kirkcaldy.

Six turned Wooden lace Bobbins, each weighted at the lower end with a small string of glass beads called 'gingles'; Pattern for lace-making, pricked on a strip of parchment, measuring 16 inches by $1\frac{1}{4}$ inch, with the name Martin Efralton 1810 written in ink on one of the linen tabs at the ends. From Buckinghamshire.

(23) By William W. Hamilton Scott, Mount Ceres, Broomieknowe, Lasswade.

Wooden Broth Ladle with a curved handle nailed on. From the Highlands.

Pair of Brass-rimmed Spectacles with the lenses frosted (roughened) on four segments at the edge, so as to leave a clear rectangular transverse part in the centre.

Gun Key of Iron, with combined screw-driver, double screw for extracting bullets, and two prickers.

(24) By John McNeill, 26 Howe Street, Edinburgh.

Pair of old Tortoise-shell rimmed Spectacles, mended in one place with a silver clasp.

(25) By Captain M. D. Erskine, Bonkyl Lodge, Duns.

Cauldron of beaten Bronze, of *situla* or bucket-shaped Hallstat type (fig. 3). It has straight sides, a short constricted neck, and an everted lip with two stout ring handles attached to it by reeded loops. The bottom is strengthened by a flat ring round the edge and cross-bars of cast bronze. The vessel measures 19 inches in height, $14\frac{1}{2}$ inches to 15 inches in diameter at the mouth, $13\frac{3}{4}$ inches at the neck, $16\frac{1}{2}$ inches at the shoulder, and $10\frac{1}{4}$ inches across the base. Found during the lifetime of the donor's great-grandfather, in a small defensive site of rhomboidal plan, on the north-west of Flanders Moss, on the estate of Cardross, Perthshire. (See *Proceedings*, vol. xxii. p. 36.)

Iron Helmet and two Breastplates, and Back pieces of Cromwellian period, also found in Flanders Moss.

(26) By Miss Cunninghame, 15 Kensington Park Gardens, Notting Hill, London.

Copper Medal commemorating the laying of the foundation stone of Covent Garden Theatre by the Prince Regent, in 1808.

Pinchbeck Locket containing human hair and seed pearls.

(27) By James Grieve, F.S.A.Scot.

Cast of the face of the Early Christian inscribed Stone found at Manor Water. Wax Mould of the same. (See *Proceedings*, vol. lxx. p. 35.)

Fig. 3. Bronze Cauldron from Flanders Moss.

(28) By Colonel Archibald Stirling, F.S.A.Scot.

Section of an eighteenth-century Wooden Water-pipe, bound with iron hoops, measuring 2 feet 8 inches in length and $12\frac{3}{4}$ inches in diameter, from Arnprior Distillery, Kippen, Stirlingshire. The pipe line ran from Arnprior Burn to the distillery, a distance of about 200 yards. The distillery closed down about 1830.

(29) By Captain H. L. NORTON TRAILL, F.S.A.Scot.

Seventeenth-century Seal of Steel, with an oval bezel. The device is a dove with an olive branch in its beak standing on a serpent swallowing its tail (an emblem of eternity), scroll-work at the sides, and the motto PEAS & LOUE (Peace and Love) below. The stem is in the form of a dolphin. The seal is believed to have belonged to a family of the name of Peace, in Orkney.

(30) By Miss HELEN SINCLAIR, Uyeasound, Unst, Shetland.

Viking Comb of Bone (fig. 4), with teeth on one side only, a small part of one end awanting and some of the teeth broken, measuring $6\frac{7}{8}$ inches long. Found in Unst, Shetland.

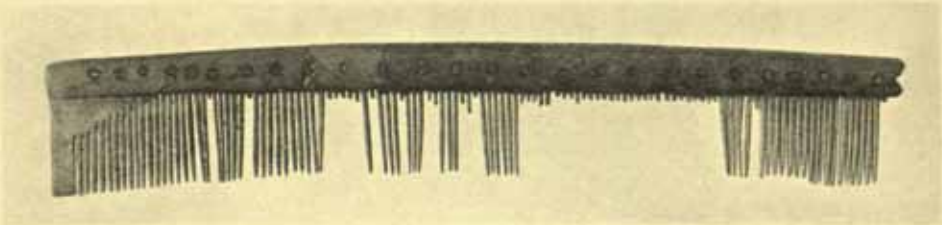


Fig. 4. Viking Bone Comb from Unst. (½.)

(31) By Sr ACHILLE BIAMONTI, Colonnello Carabinieri Reali in Congedo, Via Tacito 10, Rome, through Captain H. L. NORTON TRAILL.

Small Amphora, measuring $5\frac{1}{8}$ inches in height, found in the excavations at Festos, Crete, by the Italian Archæological Mission, in 1904.

(32) By Miss JANE HUME, 150 Rose Street South Lane, in memory of her father, John Hume, Edinburgh.

Sampler, dated 1789, sewn by MARGARATE SCOON AGED 10 YEARS, grandmother of the donor.

Sampler, dated 1790, sewn by AGNES SCOON AGED 8 YEARS, grandaunt of the above.

Pair of Brass Candlesticks with scalloped feet, measuring $8\frac{3}{4}$ inches in height.

Ram's horn Snuff-mull, with silver mounted lid, bearing the initials W. H. on the top, and I. S. TO WILLIAM HUME (grandfather of the donor) on a silver band round the mouth.

Rectangular Papier-maché Snuff-box.

Four old Razors in a contemporary wedge-shaped wooden case.

Iron Cleaver, measuring $13\frac{3}{4}$ inches in length, found in the foundations of an old house on the Castlehill, Edinburgh, over 120 years ago.

Walking-stick of Ebony, measuring 3 feet $3\frac{3}{4}$ inches in length, carved by a young sailor on H.M.S. *Cambrian*, a picture of which, in full sail, is engraved on a silver plate on the top.

War Medal, with Ribbon, for CHINA 1842, JOSEPH HUME. H.M.S. *Endymion*, round the periphery.

War Medal, with Ribbon, for BALTIC 1854–1855. It bears no name, but was awarded to Joseph Hume.

(33) By Professor THOMAS H. BRYCE, M.D., LL.D., F.R.S., F.S.A.Scot.

Rim and wall fragments of a large globular Pot of fine brown Pottery. The rim, which is $1\frac{1}{4}$ inch wide and rounded and corrugated on the top, is sharply everted, and beneath is a prominent moulding bearing a deep herring-bone pattern. In making the vessel the decorated moulding was made with the body, and the everted rim above was attached afterwards. The wall is $\frac{3}{8}$ inch thick.

Two wall fragments of a vessel of dark brown ware, measuring $\frac{5}{16}$ inch thick.

Four fragments of a vessel of coarse red ware with crushed steatite mixed with the clay.

Imperfect Whorl, made from a fragment of a steatite dish decorated on both sides by deep punctulations.

All found in a mound with internal structure. The site is known as The Cumlins, Olnafirth, Northmavine, Shetland.

(34) By THE FORESTRY COMMISSION.

Trough-like object dug out of the trunk of an oak tree, open at one end and closed at the other, with a large circular hole cut out in the bottom near the closed end. The external length is 4 feet 3 inches, height $19\frac{1}{2}$ inches, and breadth 19 inches. The hole measures 12 inches by 11 inches in cross diameters. Found in peat at Fishwick Bay, Mull.

The following purchases for the Museum were intimated:—

Cast Iron Bread Pan, three-legged, with a lid and two hooks for suspension, measuring $12\frac{1}{4}$ inches in diameter and $7\frac{1}{4}$ inches in height. From Midlothian.

Pair of Iron Humbugs, or Nose Lever for bulls, measuring 9 inches in length, from the neighbourhood of Dalkeith.

Flat Ring Brooch of Brass or Bronze, measuring $\frac{7}{8}$ inch in diameter. The pin is made from a narrow clipping of metal and the top of the ring is decorated with a wreath-like design. Found near a ruined cairn on Freswick Links, Caithness.

Four Rings of Steatite, the first perhaps a whorl, measuring $1\frac{1}{8}$ inch, $\frac{13}{16}$ inch, $\frac{13}{16}$ inch, and $1\frac{9}{16}$ inch in diameter respectively, found in the neighbourhood of Hamar, Northmavine, Shetland.

Symbol Stone, imperfect, from the Broch of Birsay, showing three warriors, and the crescent and rods, elephant, eagle, and mirror-case symbols—to be described and illustrated after the excavations are completed.

Finely polished Stone Axe, measuring $13\frac{3}{4}$ inches by $3\frac{9}{16}$ inches by $1\frac{7}{8}$ inch, and small Cup of Steatite, imperfect, measuring with handle $4\frac{1}{4}$ inches in length, from North Dale, Delting, Shetland.

Nine small objects of Flint: (1) probably a coarse Burin, measuring $1\frac{1}{32}$ inch in length; (2) Flake, Tardenoisian; and (3) worked fragment, from Dryburgh Mains, Berwickshire. (4) Triangular Implement, measuring $1\frac{17}{32}$ inch long, with battered side, microlithic technique, from Clackmae, Earlston. (5–8) Four Flakes with battered backs, measuring from $2\frac{1}{32}$ inch to 1 inch in length, from Fairnington, Kelso, late microlithic industry. (9) Flake with battered edge, $\frac{21}{32}$ inch in length, not Tardenois, may be any period, from Glenluce Sands.

Vessel, rudely cut out of a solid block of Wood, of oval shape, slightly incurved at the mouth, with two vertical handles in the middle of each end, measuring externally $13\frac{1}{2}$ inches in length, $11\frac{1}{2}$ inches in breadth, and $7\frac{3}{8}$ inches in height, found in digging peats at Dalness, Sutherland.

The following Donations to the Library were intimated, and thanks voted to the Donors:—

(1) By His Majesty's Government.

Close Rolls of the Reign of Henry III., A.D. 1261–1264.

Journal of the Commissioners for Trade and Plantations from January 1764 to December 1767. London, 1936.

Calendar of the Fine Rolls. Vol. xvi. Henry VI. A.D. 1430–1437. London, 1936.

(2) By J. Graham Callander, LL.D., F.S.A.Scot., Director of the National Museum of Antiquities of Scotland.

The MacCrimmon Family, 1500–1936. By George C. B. Poulter and Charles P. Fisher. Camberley, 1936.

British Coracles. By J. Hornell. Part ii. Reprint from *The Mariners' Mirror*, vol. xxii., No. 3. July 1936.

L'Omalein. Extrait du *Bulletin de la Société Royale Belge d'Anthropologie et de Préhistoire*. 1936. By J. Hamal-Nandrin, J. Servais et Maria Louis.

The Story of the River Deveron: from Source to Sea. By W. MacGillivray, F.S.A.Scot.

(3) By Miss M. E. B. Simpson, M.A., F.S.A.Scot.

Türk Tarih, Arkeologya ve Etnografya Dergisi. Sayi: 1. Temmuz. 1933. Istanbul, 1933.

Ancient Monuments and Historic Buildings. H.M. Office of Works:—
The Priory of Inchnahome. Official Guide.
The Castle of Stirling. Official Guide.

(4) By The Council of the Royal Scottish Academy.

One Hundred and Eighth Annual Report. Edinburgh, 1935.

(5) By An Anonymous Donor, through the Publishers.

Centenary Edition, X. and XI. The Letters of Sir Walter Scott. 1826–1828 and 1828–1831. London, 1936.

(6) By The Middlesex Standing Joint Committee.

County of Middlesex. Calendar to the Sessions Records. New Series. Vol. ii. 1614–1615. London, 1936.

(7) By Dr John Lindsay, M.A.

Publications of the Clan Lindsay Society. Vol. iv. No. 16. Report of the Annual Meeting, 1935: with Bulletin.

(8) By The Director, The Royal Scottish Museum.

Scottish Education Department. Report for the Year 1935 on the Royal Scottish Museum. Edinburgh, 1936.

(9) By Rev. James Meikle, B.D., F.S.A.Scot., the Author.

The History of Alyth Parish Church. Edinburgh, 1933.
Places and Place-Names round Alyth. Paisley, 1925.

(10) By Mrs Agnes M'Laren Lockhart, 16 Broompark Drive, Dennistoun, Glasgow, the Author.

The Origin and History of the Old Glasgow Club, 1900–1935, with Historical Reminiscences of Glasgow. Glasgow, 1936.

The Bothy Songs and Ballads of Aberdeen, Banff and Moray, Angus and the Mearns. Collected and edited by John Ord, F.S.A.Scot. London, 1930.

(11) By ALEXANDER O. CURLE, C.V.O., LL.D., F.S.A.Scot.

Les Tumulus du Departement de la Cote-d'Or. By Francoise Henry. Paris, 1933.

Emailleurs d'Occident—Francoise Henry. Extract from *Prehistoire*. Tome ii., fasc. i.

(12) By THE BOARD OF TRUSTEES.

Twenty-ninth Report to the Secretary of State for Scotland by the Board of Trustees for the National Galleries of Scotland for the Year from 1st January 1935 to 31st December 1935. Edinburgh, 1936.

(13) By THE CLAN MACLEOD SOCIETY.

The Clan MacLeod Magazine, 1936.

(14) By Major J. W. CURSITER, F.S.A.Scot.

Orkney and Shetland Records. Vol. i., part vii. Old Lore Series, No. 18. October 1909.

Voyage en Sardaigne. By Colonel A. de la Marmora. Second Edition. Atlas. Paris and Turin, n.d.

(15) By Sir GEORGE MACDONALD, K.C.B., etc., *President*.

Allatdiszes Kerekveto Fejek Kelta-Romai Kocsikrol. (Zoomorphische Bronzeaufsätze als Radabweiser auf Keltisch-Römischen Wagen.)—Andreas Alföldi. (*Archæologiai Ertesits*, xlviii., 1935.)

Archaic Marble Sculpture from the Acropolis. A Photographic Catalogue by Humfry Payne and Gerard Mackworth Young. London.

Bulletin of the Buffalo Society of Natural Sciences. Vol. xvii. No. 2. The Story of Money as told by The Knox Collection. By Stuart Mosher. Buffalo, N.Y., 1936.

The Last Age of Roman Britain. By Edward Foord. London, 1925.

The Romans in Britain. By Bertram C. A. Windle, LL.D. London, 1923.

Roman London. By Gordon Home. With a Chronology compiled by Edward Foord. London, 1926.

The Excavations at Dura-Europos, 1928 and October 1932–March 1933.

With a Spade on Stane Street. By S. E. Winbolt, M.A. London, 1925.

Die Saalburg: Führer durch das Kastell und seine Sammlungen. By H. Jacobi. Homburg, 1936.

(16) By THE CURATOR, Russell-Cotes Art Gallery and Museum, Bournemouth.

Annual Report, vol. xv., No. 2. June 1936.

(17) By DAVID COUPER THOMSON, J.P., D.L., F.S.A.Scot., the Compiler.

Thomson—Couper—Yule—Sinclair. Genealogical Chart. Dundee, 1936.

(18) By A. J. H. EDWARDS, F.S.A.Scot.

Deutsches Museum, Munich. Brief Guide. Munich, 1933.

The Migration Style of Ornament in Norway. Bjørn Hougen. Oslo, 1936.

(19) By Professor R. K. HANNAY, LL.D., F.S.A.Scot., the Author.

The Early History of the Scottish Signet. Edinburgh, n.d.

(20) By THE LIBRARIAN, University of Aberdeen.

Teinds and Agriculture: an Historical Survey. By Alexander A. Cormack, M.A., D.Litt. Oxford, 1930.

Handbook of the Old Northern Runic Monuments of Scandinavia and England. By Dr George Stephens, F.S.A. Edinburgh and Copenhagen, 1884.

University of Pennsylvania. Evidence of Early Man in North America, based on Geological and Archæological work in New Mexico. By Edgar B. Howard. Philadelphia, 1935.

Mittheilungen des Anthropologischen Vereins in Schleswig-Holstein. vi–xvii. 1893–1905.

Neun und dreissigster Bericht des Schleswig-Holsteinischen Museums vaterländischer Alterthümer. Kief, 1890.

Skythien und der Bosporus. By M. Rostowzew. Band i.—Kritische Übersicht der schriftlichen und archäologischen Quellen. Berlin, 1931.

(21) By JAMES CURLE, LL.D., F.S.A.Scot., the Author.

A Little Book about Melrose. Reprinted from *The History of the Berwickshire Naturalists' Club*, vol. xxix.

(22) By A. D. LACAILLE, F.S.A.Scot., the Author.

Mediæval Sepulchral Monuments at Linton, Herefordshire. Reprinted from the *Woolhope Naturalists' Field Club Papers*, 1933.

(23) By THE LIBRARIAN and CURATORS, Inverness Museum.

Inverness Museum: Brief Guide. Inverness, 1936.

(24) By Monsieur JACQUES BOUSSARD, c/o Monsieur Alexandre Pommier, Juge Honoraire, Rocheplatte 7, Orlean, Loiret, France, the Author, through Miss CHALMERS HANNA, F.S.A.Scot.

Ralph Neville, Eveque de Chichester et Chancelier d'Angleterre († 1244) d'après sa correspondance. (Extrait de la *Revue Historique*, clxxvi., 1935.)

(25) By Colonel T. L. BROWN, Drumfin, Campbeltown.

On Active Service with the Argyll and Sutherland Highlanders in Belgium, France, and Italy—with Portraits: A Ranker's Reminiscence and War Notes. By John Maclean. Vols. i. and ii. Edinburgh, 1926.

(26) By R. C. NESBITT, Nisbet House, Duns.

Memorial to Alexander Nisbet the Herald, 1657–1725: together with some Account of his Ancestral Home, Nisbet House. Address by His Grace the High Commissioner at Greyfriars Church, Edinburgh, Wednesday, 30th May 1934.

(27) By THE HOUSESTEADS MANAGEMENT COMMITTEE.

Housesteads Fort, Milecastle and Settlement. By Eric Birley, M.A., F.S.A. Housesteads, 1936.

(28) By W. DOUGLAS SIMPSON, D.Litt., F.S.A.Scot., the Author.

Balquhain Castle, Aberdeenshire. Reprinted from the *Aberdeen University Review*, July 1936.

Festschrift zur Hundertjahrfeier des Museums vorgeschichtlicher Altertümer in Kiel. Neumünster I. H., 1936.

(29) By THE B.B.C.

Broadcasts to Scottish Schools. Autumn Term, 1936. Scottish History.

(30) By J. BOLAM JOHNSON, F.S.A.Scot.

Ancient Monuments and Historic Buildings. H.M. Office of Works. Middleham Castle, Yorkshire. Official Guide. London, 1933.

(31) By J. W. H. JOHNSON, 12 Granby Road, Edinburgh.

The Arts of the Church: The Ornaments of the Ministers. By Rev. Percy Dearmer, M.A. London and Oxford, 1908.

(32) By THE DIRECTOR, Royal Museums and Libraries, Peel Park, Salford.

City of Salford Museums, Art Galleries and Libraries. Report of the Director, 1936.

(33) By THE ANCIENT MONUMENTS SOCIETY.

Year Book and Proceedings, 1935–36. Manchester, 1936.

(34) By Commander G. E. P. HOW, R.N., F.S.A.Scot.

How of Edinburgh Ltd., 1936. Exhibition, 15 Stratton Street, London, W. 1., 24th September–16th October. Catalogue.

(35) By Rev. G. A. FRANK KNIGHT, D.D., F.S.A.Scot., the Author.

Archæological Light on the Early Christianising of Scotland. Two vols. London, 1933.

(36) By Rev. H. M. AGNEW, M.A., F.S.A.Scot.

Evidence in Support of Pre-Chellean Culture from the East London Clays. By D. R. MacFarlane. Reprinted from the *South African Journal of Science*. Vol. xxxii. November 1935.

(37) By Professor V. GORDON CHILDE, D.Litt., F.S.A.Scot.

Skrifter Utgivna av Kungl. Humanistiska Vetenskapssamfundet i Lund. XXII. Der Ostskandinavische Norden wahrend der Aeltesten Metallzeit Europas. By J. E. Forssander. Lund, 1936.

(38) By THE DIRECTOR, National Gallery of Scotland.

Catalogue, National Gallery of Scotland, Edinburgh. Forty-ninth edition, 1936.

(39) By THE GOVERNMENT OF INDIA.

The Coinage and Metrology of the Sultans of Dehli, incorporating a Catalogue of the Coins in the Author's Cabinet, now in the Dehli Museum. By H. Nelson Wright, F.R.N.S. Delhi, 1936.

(40) By E. T. LEEDS, M.A., F.S.A., the Author.

Early Anglo-Saxon Art and Archæology, being the Rhind Lectures delivered in Edinburgh, 1935. Oxford, 1936.

(41) By THOMAS SHEPPARD, M.Sc., F.S.A.Scot.

Hull Museum Publications, Nos. 188–190. Hull, 1935, 1936.

(42) By HENRY J. CRAWFORD, B.A., F.S.A.Scot., the Author.

Turner's Sketches and Drawings of Stirling and Neighbourhood. With some Notes on the Artist's Scottish Tours, also a Note on John Ruskin and Stirling. Stirling, 1936.

(43) By The Most Hon. THE MARQUESS OF BUTE, K.T., F.S.A.Scot.

Dundonald Parish Records. Printed for private circulation, 1936.

(44) By Dr P. BOSCH GIMPERA, the Author.

Etnologia de la Peninsula Iberica. Barcelona, 1932.

(45) By THE SCOTTISH ANTHROPOLOGICAL AND FOLKLORE SOCIETY.

Proceedings, vol. ii., No. 2. October 1936.

(46) By W. F. RANKINE, F.S.A.Scot., the Author.

A Mesolithic Site at Farnham.

(47) By Rev. R. S. G. ANDERSON, B.D., F.S.A.Scot., the Author.

The Antiquities of Gigha. A Survey and Guide. Newton-Stewart, 1936.

(48) By Geheimrat Professor ERNST FABRICIUS, *Hon.* F.S.A.Scot.

Die römischen Heilthermen von Badenweiler. By Hermann Mylius. Berlin and Leipzig, 1936.

(49) By C. BLAKE WHELAN, Glenside, Low Castlereagh, Co. Down, the Author.

The Palæolithic Question in Ireland.

(50) By W. BULMER, Shanklin, Stocksfield, Northumberland, the Compiler.

Manuscript List of Scottish Carved Stone Balls.

The following purchases for the Library were intimated:—

The History of Curling and Fifty Years of the Royal Caledonian Curling Club. By John Kerr, M.A., F.S.A.Scot. Edinburgh, 1890.

Map of Britain in the Dark Ages—South Sheet. Southampton, 1935.

Ancient Monuments and Historic Buildings. H.M. Office of Works.

The Castle of Balvenie. Official Guide.

The Abbey of Dundrennan. Official Guide.

Pewter down the Ages, from Mediæval Times to the Present Day, with Notes on Evolution. By Howard Herschel Cotterell, F.R.Hist.Soc. London, 1932.

Studien zur Wikinger-Kultur. By Peter Paulsen. Neumüster, 1933.

Vorgeschichtliche Kulturkreise in Europa. By Nils Åberg. Copenhagen, 1936.

Der Obergermanisch-raetische Limes des Römerreiches. Lieferung, 53. Strecke 4–5. Berlin and Leipzig, 1936.

Acta Archæologica. Vol. vi., fasc. 3. Copenhagen, 1935. Vol. vii., fasc. 1. Copenhagen, 1936.

Transactions of the Newbury District Field Club. Vol. vii., No. 3, 1936.

Royal Commission on Historical Monuments. England:—

An Inventory of the Historical Monuments in Westmorland. London, 1936.

Nature. Saturday, 15th August 1936.

Corpus Inscriptionum Latinarum. Vol. xvi. Berolini, 1936.

Dictionnaire d'Archeologie chrétienne et de Liturgie. xii. 2.

Extracts from the Records of the Burgh of Edinburgh, 1626–1641.

Le Finnmarkien. Les Origines de la Civilisation dans l'extreme nord de l'Europe. By Johs. Bøe et A. Nummedal. Oslo, 1936.

The following Communications were read:—

I.

A FURTHER NOTE ON THE ROMAN FORT AT CROY HILL.

By Sir GEORGE MACDONALD, K.C.B., President.

Introductory.

When the outline of this fort was ascertained in 1931, the resulting plan showed that the little kitchen-garden on the hill-top would be the most promising spot in which to search for traces of interior buildings. No attempt was, however, made to find them then. The days of the cottage to which the garden was attached were known to be numbered, and the time could not be far distant when it would be possible to carry out a thorough examination without inconvenience to any one. Early in 1935 Mr Charles Brown, W.S., Secretary of Carron Company, who had kindly promised to keep me informed of developments, wrote to tell me that demolition was to begin almost immediately: he thought I ought to know this, as there was always a chance that the walls which were to be pulled down might contain something of interest. With the willing co-operation of Mr Samuel Smith, our Corresponding Member, it was easy to keep a careful watch on the house-breaking process.

The direct outcome was disappointing. It very soon became apparent that in the course of the nineteenth century the cottage had been completely rebuilt, mainly with modern material. In the process of reconstruction Roman stones had hardly been utilised at all, unless it were in the foundations, and these we never saw, as the lower part of the structure has purposely been left intact. Consequently, apart from what may once have been a hypocaust pillar, we detected very little that was in any way suggestive of the former presence of the *castellum*. The contrast with the adjacent field-dykes, as well as with the ruinous bothy to the north, was striking. In these the *disjecta membra* of Roman masonry are abundant, so abundant indeed as to leave little or no doubt that, not only the principal buildings of the fort, but also its barracks, must have been reared in stone. Barracks of stone have come to light nowhere else on the Antonine Vallum. The exception, however, if it be an exception, admits of a simple explanation. In many places the rock is so close to the surface that it would have been a very laborious business to provide the post-holes or sleeper-trenches required for the support of timber

erections. In all likelihood, therefore, the barracks at Croy Hill, like the stone walls of Castlecary fort, are a timely reminder of the unwisdom of basing conclusions on the hypothesis that at any given period Roman military architects were bound by a rigid adherence to rule-of-thumb methods. Within reasonable limits they were always ready to adapt themselves to circumstances. As we shall see presently, they even allowed themselves some latitude in the design of a building whose general plan had to conform to a stereotyped pattern.

The disappointment encountered at the cottage was not altogether a surprise, and there was ample compensation, inasmuch as the garden was now set free for exploration. Mr Smith, who was every whit as anxious as I was to probe the secrets of the hill, expressed his willingness to help, and his promise has been redeemed many times over. It is no exaggeration to say that he deserves much of the credit for the degree of success that it is my good fortune to be able to chronicle. Residing within manageable distance, he never lost contact with the work for a day, an ideal which it would have been hopeless for me to aim at. His gift of acute observation, coupled with his appreciation of the possible importance of seemingly trivial appearances, was a guarantee that nothing of moment was being missed, and he never failed to summon me if any new feature emerged. All the while he turned his camera to excellent account, keeping a detailed photographic record which has been invaluable for the leisurely consideration of the various questions that have had to be faced. When I add that the sections reproduced by Mr C. S. T. Calder in Plate III. are his, the extent of my debt to him will be still more manifest.

Despite the entire absence of surface remains, the whole area of the fort has, very properly, been scheduled under the Ancient Monuments Act. The first step was therefore to enlist the benevolent neutrality of H.M. Office of Works. By a happy chance June brought an opportunity of mentioning the matter to Mr Bushe Fox, Chief Inspector of the appropriate Department. As he made no objection, a formal application for permission to excavate was addressed to Carron Company, the owners. They consented at once, but it turned out that further delay was inevitable. It was imperative that the actual digging should be entrusted to thoroughly experienced hands, for the coating of soil was thin, and valuable evidence might easily be lost beyond hope of recovery. Mr Alexander Mann, who had done such excellent work on Croy Hill in 1931–32, was no longer available, having obtained permanent employment elsewhere. It was therefore decided to wait until Mr John Campbell, who had acted as our foreman at Mumrills, should be free from his seasonal

engagements. The autumn was so wet that it was the end of October before he could be released. For five or six weeks thereafter the weather was fairly open. Of its subsequent behaviour the less that is said the better. Frost, fog, and snow combined to make things unpleasant.

During the earlier and more critical stages Mr Campbell did everything himself. Later, when accumulations of earth had to be moved, he was

Fig. 1. View of N. part of the Principia under snow. The two workmen are standing in the entrance and the two other figures on the N. wall of the Outer Court. For the channel in the middle foreground, which lay under the floor of the Ambulatory, see p. 51.

reinforced by one or two labourers. The cost of the undertaking was met by a welcome grant from the Society's Excavation Fund. In addition, I have to thank individual Fellows for assistance rendered in various forms, more particularly Mr A. O. Curle, C.V.O., who frequently accompanied me to the site and gave me the benefit of his opinion on points of special difficulty. The plan (Plate II.) was prepared by Mr G. P. H. Watson, who kindly acted as surveyor, while Mr Smith's series of photographs was usefully supplemented by Mr Curle, Mr D. P. Maclagan, and my son. I had also the advantage of a discussion with Mr I. A. Richmond.

Once the enterprise was fairly started, a day or two sufficed to dispel any doubt as to whether it was likely to be worth while. We struck

the remains of the Principia with our very first trenches in the garden. Following up the trail and passing beyond the north wall of the little enclosure, we were soon in possession of the outline of the building. The foundations had survived almost everywhere, and in quite a number of places they still supported one or two courses of masonry. The space which they enclosed was then cautiously stripped, a sharp look-out being kept for any indications likely to be of service in an endeavour to unravel the tangled skein of successive phases, dimly discernible from the outset. It had been no part of our plan to go farther, but a reconnaissance of the Military Way and its immediate surroundings induced a change of mind. Unattractive as the prospects had seemed to be, the roadway itself belied anticipation by contributing exceptionally interesting evidence, while a clay foundation, which projected into the gutter on the farther side of it, ultimately developed into a granary lying in the western half of the Prætentura. A glance at Plate I. will make the region and extent of our activities plain.

When the information gleaned at various points had been brought together and collated, it was seen that Principia, Military Way, and Granary had all the same story to tell, although they told it in different ways. It will conduce to clearness if, to begin with, each of the three is allowed to speak for itself, cross-references being admitted only where absolutely necessary. Thereafter it may be possible to combine their several testimonies so as to produce a trustworthy picture of the fortunes of the fort during the years of its occupation by the Romans. In essaying such tasks one is accustomed to turn to the minor objects found—above all, to the pottery—for guidance or verification. Here, with a single important exception, no help of the kind will be forthcoming. The harvest of relics was almost incredibly meagre.

This must not be taken to mean that the equipment of the garrison or the plenishing of their quarters was below the normal standard. The true and sufficient explanation is that, over the area to which our operations were restricted, there was seldom more than a foot or two of soil, generally very much less, between the modern surface and the hard basaltic mass beneath. A study of the sections (Plate III.) will show that the condition of things must have been very much the same in Roman days.[1] It will also show that the builders of the fort had made no attempt to remove the irregularities that marked the underlying contour. They accepted it as it was, sometimes laying their clay

[1] In examining the sections it should be understood that, where there is a continuous black line above the hatching which indicates rock, the soil was cleared away to ascertain the exact outline. Elsewhere the division between soil and rock is to some extent conjectural.

foundations directly upon the rock, in at least one place dispensing with them altogether. Within the walls, again, the smooth, intractable substratum was even allowed here and there to encroach upon the floor. And another adverse factor has to be reckoned with. The hamlet of Croy Hill Houses, of which the cottage was the last representative, had been continuously in existence since the beginning of the eighteenth century or earlier, so that over a long series of years there had been much trampling of modern feet. In the circumstances there is no need to wonder why so little that is Roman has survived. A certain number of pottery fragments were picked up, but the great majority of them had belonged to vessels of comparatively recent manufacture.

The Principia.

The general plan of the Principia, as revealed when it was first uncovered, is simple enough (fig. 2). In the absence of any compelling

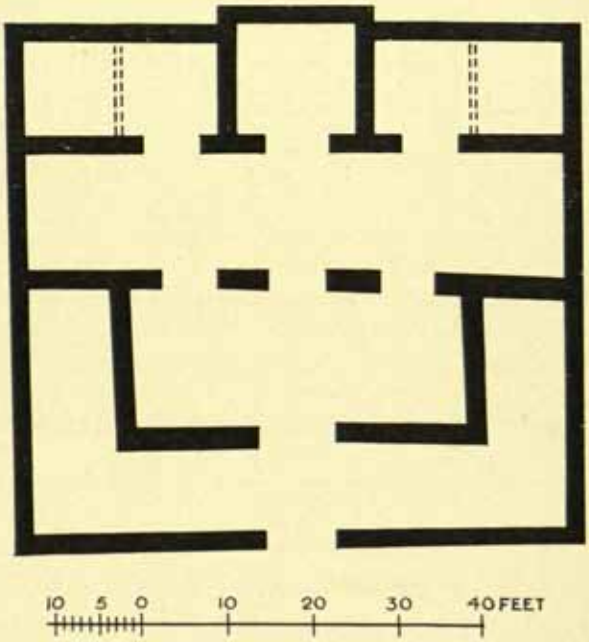
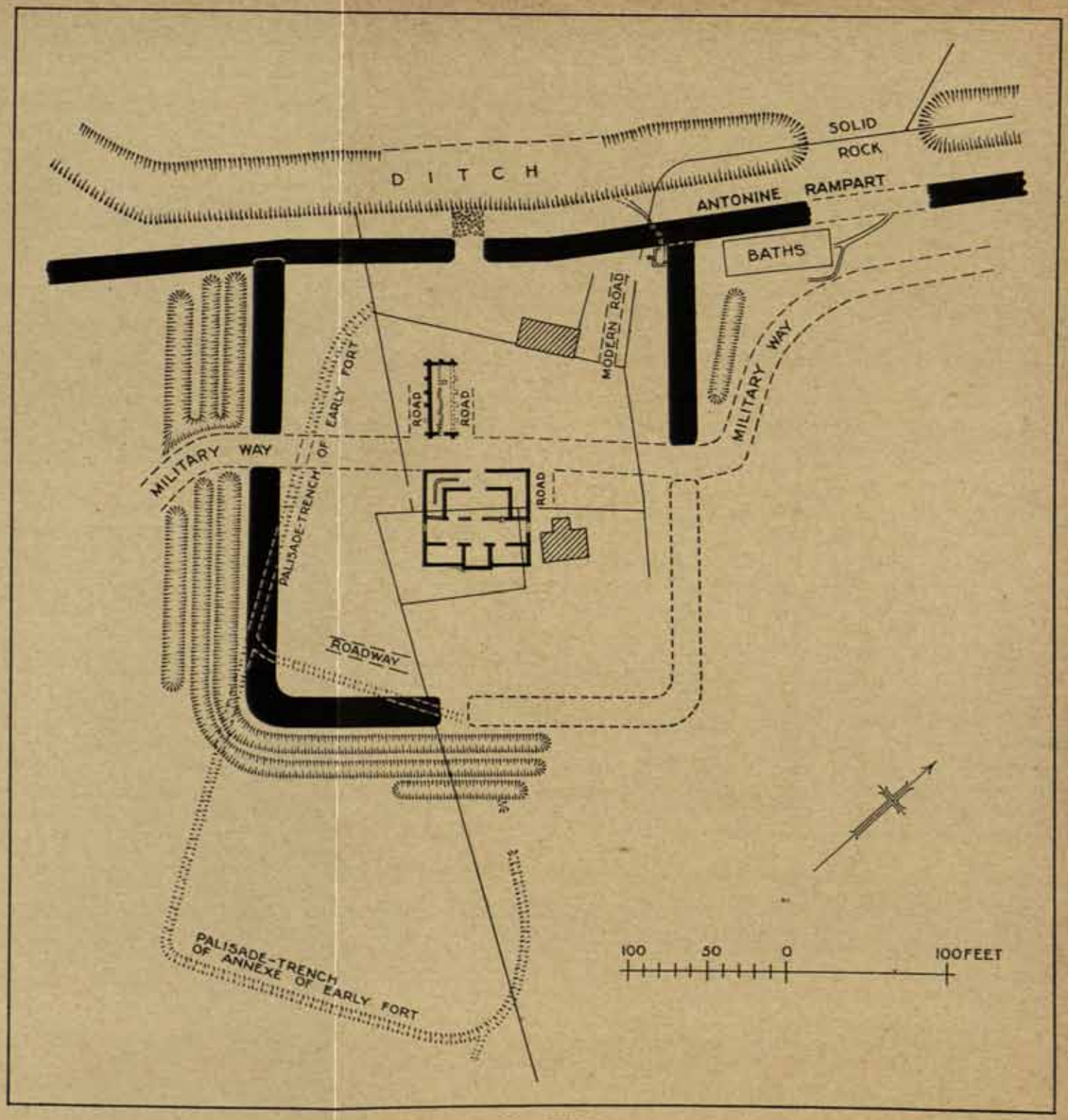


Fig. 2. Plan of the Principia.

reason for a departure from the ordinary practice, such as was noted at Cadder, the building looked out over the land beyond the Vallum. If we turn to Plate II.—which should be consulted throughout the detailed



Plan of Croy Hill Fort.

SIR GEORGE MACDONALD.

PLATE I.

[*To face page* 36.

description that follows—we shall find that, exclusive of a projection of some 2 feet at the back of the Sacellum, it had almost the appearance of a square, with an extreme length of 61 feet from north-west to south-east and an extreme breadth of 67½ feet from north-east to south-west,[1] all three measurements being taken over walls that were on an average 2 feet 1 inch thick. A comparative table of sizes would bring out the fact that, as might have been expected from the dimensions of the area which the commandant had to administer, the building was smaller than the Principia of any of the other known Vallum forts, always excepting Rough Castle. It will be observed that a gutter has run round all four sides, carefully adapting itself to the projecting portion of the Sacellum. As there were no gutters anywhere in the interior, the whole of the rain-water must have dripped outwards. The slope of the roof thus indicated is very unusual. I can recall no similar arrangement elsewhere, although I daresay parallels could be found at home or abroad, if they were searched for.

A gateway, about 8½ feet wide, opened from the Via Principalis on to a cobbled roadway which led direct to the Outer Court. Instead of going straight on, however, one could turn either to right or to left into a paved Ambulatory 9 or 10 feet wide, which enclosed the Court on three sides, its east and west corridors terminating on the south against the partition that separated the outer or northern division of the Principia from the Cross Hall. The enclosure had an interior measurement of 38 feet by 16 feet, and there was no sign of paving or of cobbling. It had undoubtedly been open to the sky. The Ambulatory, on the other hand, would be covered in and, as already stated, its roof must have sloped downwards and outwards to drain into the gutter which ran at the foot of the main walls. Its front or highest part would be supported by columns, resting on the top of the wall whose foundations can be seen upon the plan. This wall was probably not much more than waist high, so that those within the Ambulatory could look through the portico into the Court, from which they would in return receive their light.[2]

To whatever other purposes the Outer Court may have been put, it certainly served as a vestibule to the Cross Hall, the principal doorway into which, 7 feet wide, was in the middle of the dividing wall. To the west there was a second and slightly narrower entrance. Considerations

[1] The fort therefore actually faces a good deal west of north. In the sequel, however, it will be convenient to disregard this and to use the terms 'north,' 'south,' 'east,' and 'west' as if it faced the north.

[2] Such an arrangement is not infrequent at Pompeii. For a good example, see R. C. Carrington, *Pompeii*, pl. ix., which shows the peristyle of the Villa dei Misteri.

of symmetry make it practically certain that there has been a corresponding entrance on the east. If so, however, the threshold must have been stepped both inside and outside, for there is no gap upon the plan. At first sight such an expedient seems odd, although there is an analogy for it at the north door of the 'inner court' at Housesteads, the explanation being similar. Section C–D (Plate III.) makes the reason apparent. Just where we should look for the subsidiary entrance on the east, a hump of rock rises for 16 inches above the level of the adjoining foundation. To remove such a formidable obstacle would have been a far more difficult business than to provide a couple of steps. There is one further point relating to access to the Hall. A break in the foundation of its east wall raises the question whether there may not have been an entrance from the side street through a postern. It is very doubtful whether an affirmative answer would be justified. It is true that elsewhere—as, for example, at Housesteads—there have been doors at one or both ends of the corresponding apartment. But at Croy Hill the break was no more than 3 feet wide and, even at that, there was no trace whatever of door-jambs. I believe that wall and foundation had been deliberately torn out here at some much later time.

The Cross Hall itself extended the whole breadth of the building, the internal dimensions being 62½ feet by 13½ feet. The floor had been neither paved nor cobbled. The earth that covered the eastern part of it did little more than conceal the substratum of basalt. Towards the west, on the other hand, where the ground had originally fallen somewhat, recourse had been had to artificial making-up, in order to secure approximate uniformity of level, and there was some evidence of two floors. Careful but fruitless search was made at the western end for any sign of the *tribunal*, the little rectangular platform on which the commandant took up his position when he had occasion to address his staff or to deal with delinquents. Mr Birley's happy identification of this feature at Chesterholm, where the steps had survived,[1] has enabled us to recognise it at the corresponding end [2] of the Cross Hall of other forts, among which Housesteads and Balmuildy may be mentioned as typical. At Croy Hill, however, there was nothing to bear witness to its former presence. Presumably, therefore, it was of wood. It need not have been high, and any marks which the foundation planks may have left in the made-up soil had been wholly obliterated.

It is now generally accepted that, in British *castella* at all events, such halls were as a rule completely roofed over. But there is more than

[1] *Arch. Ael.*, 4th series, vol. xiii. p. 223.
[2] That is, the end on the right as one enters from the Outer Court.

a suspicion that, in this as in other respects, Croy Hill was exceptional. Plate II., I think, puts it beyond doubt that from the south end of each of the two side-corridors of the Ambulatory the outward-sloping roof was continued right across the Hall. I see no other plausible way of accounting for the curious manner in which each of the L-shaped foundations of the portico wall returns for a short distance along the line of the partition. It cannot have been to support columns, for at these points there would be no columns. It is more reasonable to believe that above each of the returns the wall instead of being breast- or waist-high, as it was for the greater part of its length, was continued right up to the full height of the portico, in order to provide a substantial base of masonry for the heavy beam which was to carry the front part of the roof over the 13½ feet span that had next to be bridged. The Hall, then, would be covered in at either end. What about the central portion of it?

It is tempting to imagine that there might have been a clerestory. That indeed would have been the simplest solution of the combined problem of lighting and shelter. But the evidence, such as it was, seemed to point in a different direction. On the floor there was much black matter, the consistency of which left no room for doubt that it was carbonised wood. Six or seven lumps of it, selected at random, were therefore submitted to Mr M. Y. Orr, F.R.S.E., of the Royal Botanic Garden, who at once identified all of them, save one, as fragments of oak, the solitary exception being of hazel. The natural inference was that the black matter represented the remains of oaken rafters, which had fallen to the ground when the structure to which they belonged had collapsed, and it is significant that here and there on the surface were red patches, suggestive of conflagration. The black matter, however, was not spread impartially all over the room. It occurred only at the ends—that is, in one or other of the two areas that would lie immediately beneath the outward-sloping roof which is vouched for by the gutter and the returns of the portico wall. This peculiarity of its distribution was observed at a comparatively early stage of our work, when Mr Smith drew my attention to it as a phenomenon that called for explanation. Now that we are attempting to reconstruct a picture of the building, the explanation 'leaps to the eyes.' Like the Outer Court, the central part of the Hall has been open to the sky, the ends alone being roofed. The arrangement is surprising. It is true that there was no roof over the central part of the early basilica at Pompeii, as Mr Richmond has reminded me, and the Cross Hall was, of course, the military counterpart of the municipal basilica. But those who have dug on Croy Hill in winter-time would hesitate to affirm that it enjoys a Mediterranean climate.

We come next to the range of rooms which invariably occupied the innermost division of the regimental Headquarters. In this case, as in so many others, there were five, that in the middle being the Sacellum, or Shrine of the Standards, once hallowed by the sculptured relief of Jupiter Dolichenus, two fragments of which were found in one of the ditches in 1931.[1] The short length of gutter still preserved is sufficient to prove that all five had been covered by the same outward-sloping roof as extended round the rest of the building, and here too there were traces of wooden rafters and abundant signs of conflagration.

At the back the Sacellum projected a little way beyond the line of its companions, a feature very commonly found elsewhere, and the extension gave it a north-to-south length of something over 13 feet, while its east-to-west measurement was about 14 feet. The entrance, 8 feet 4 inches wide, was exactly opposite the doorway that led from the Outer Court into the Cross Hall. There will be a good deal to say about the floor presently. Meanwhile the only point that need be mentioned is that there were rescued from it several pieces of window-glass and a few scraps of coal. As there is every likelihood that the wall at the back was reserved for the Dolichenus relief, the lighting was probably from above.

The other members of the range can be dismissed very briefly. To the right and to the left of the entrance to the Sacellum was a narrower door, each of the two admitting to a paved room, the size of which could safely be estimated by the position of the paving-slabs that had escaped destruction. In the room on the west there was but a single survivor. The state of affairs on the other side was luckily very different (fig. 3). The dimensions of these two rooms were almost identical, being, for both, rather more than 10 feet from north to south and rather more than 11 feet from east to west, and on the side of each farthest from the Sacellum, with a partition between, was an inner room, accessible only through the partition, which must have been of wood since no trace of foundations could be discovered. The two inner rooms were of the same size as those from which they were entered. The one on the west had been cobbled, while the floor of the one on the east, which was close to the rock, may have been merely earthen. These four side-rooms had been regimental offices of one kind or another, but only the most easterly of the series yielded any hint of the exact use to which it had been put. From the presence in it of seven *ballista* balls we may infer that it had been the *armamentarium* or arsenal.

It will be understood that up to this point the description has been

[1] *Proceedings*, vol. lxvi. (1931–32), pp. 268 ff.

a description of the building as we first uncovered it—that is, of the Principia which we must suppose to have been in use immediately prior to the final withdrawal of the Romans. But, as we already knew that Croy Hill had shared in the vicissitudes which other forts on the Antonine Vallum had undergone,[1] we were fully prepared to meet with signs of repair or alteration. It was not long before the expected happened. When we were examining the floor of the Sacellum, we

Fig. 3. View of remains of paving in room immediately E. of the Sacellum, looking N.E.

noticed that, as the earth was shovelled away, something resembling a pattern of large checks began gradually to show itself upon the surface. With the completion of the clearance the lines dividing the checks stood revealed as five carefully built channels, arranged after the fashion of a gridiron, three running from north to south and two from east to west (fig. 4). Their depth was fairly uniform at 6 or 7 inches. On the other hand, they varied considerably in breadth, the one in the centre of the north to south series measuring 12 inches across, while the others ranged from 6 inches to 8 inches. All five were filled from end to end with stones of the size of a man's fist or smaller, and the filling had plainly been deliberate, for the stones were systematically

[1] *Proceedings*, vol. lxvi. (1931–32), p. 261.

and tightly packed. Here then was evidence of at least two phases in the life of the fort. In the final phase the channels had been intentionally thrown out of use, which meant that they had ceased to be of any value for the purpose they had served in the phase which had preceded.

What could that purpose have been? Ventilation and drainage were both considered as possibilities—only, however, to be set aside, the

Fig. 4. Floor of the Sacellum, looking N. The channels have been partially cleared of the packing, in order to give an impression of their original appearance.

latter because the bottoms showed no trace of the sediment which would certainly have been deposited if water had ever run over them, the former because the need of anything of the sort was doubtful and also because the gridiron arrangement was wholly unsuitable for the circulation of air. Mr James Curle was the first to provide a clue to the true answer. He reminded me that in some of the *Wachtposten* on the German Limes the wooden tower had been reared upon a framework of timber sleepers, for the accommodation of which there had been dug a set of trenches arranged in exactly the same reticulated manner as the channels on which we had so unexpectedly lighted.[1] The probability that our channels were also sleeper-trenches was immediately apparent. So far as their function was concerned, the fact that they were built, not dug,

[1] See, for instance, *Obergermanisch-raetische Limes*, Bd. vii. Str. 14 (Lief. xlv.), Taf. 6.

was irrelevant, and digging would in any event have been impossible, owing to the proximity of the rock.

At this juncture I appealed to the unrivalled experience of Professor Fabricius, our Honorary Fellow, who had no hesitation in accepting the view that the channels must be sleeper-trenches. While he had never met with any parallel in a Sacellum, he referred me to a most convincing analogy of another kind, an illustration of which he has kindly allowed me to reproduce from his great work on the Limes (fig. 5).

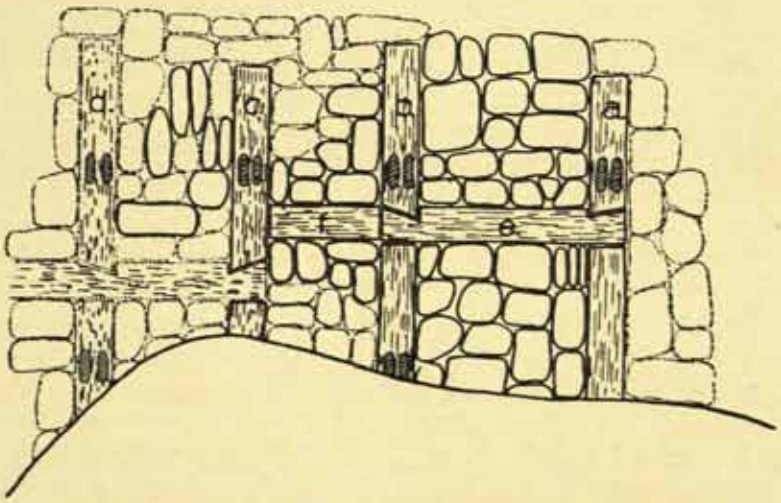


Fig. 5. Foundation for pier of wooden bridge over the river Jagst.

It is the foundation of one of the piers of a wooden bridge which had spanned the river Jagst, close to Kastell Jagsthausen.[1] It was discovered, measured, and sketched during the very dry summer of 1921, when the stream was abnormally low. The preservation of the wood through so many centuries is due to its having been continuously under water. Note how the sleepers are let into one another, so as to knit the whole framework together, and note too the holes into which the uprights of the pier have been mortised. The trenches, it should be added, average a little over 8 inches in breadth, a size that approximates closely to the dimensions given above for the Croy Hill examples.

The purpose of the channels themselves may therefore be taken as established. The purpose of the framework of beams they were designed to contain is more difficult to determine. My own belief is that it was

[1] *Op. cit.*, Bd. iv. A, Str. 7–9 (Lief. xlviii.), p. 120.

intended to support a series of stout posts, on the tops of which there had rested the planking of a raised floor. This would not be more than about 2 feet above the natural surface, and in it there would be one or more trap-doors, opening into the space beneath. The cellar thus formed would constitute the regimental strong-room or safe. The usual way to provide a safe of the kind within a Sacellum was, of course, to sink a pit below ground level and furnish it with a stone lining. At Croy Hill, however, such a plan was impracticable, there being no depth of earth in which to dig, as is clear from section A–B in Plate III. The raising of the floor was a simple alternative.

When I put this suggestion tentatively to Professor Fabricius, he saw two possible objections, both of which, however, can (I think) be effectively answered. In the first place, he asked, what about the opening that would be left beneath the raised floor opposite the entrance? The reply is that there would be no such opening. The gap between the ends of the walls on each side of the doorway would be completely covered by the short flight of one or two wooden steps that would be necessary in order to give admission to the Sanctuary. In the second place, would it not have been much easier to have had a scarcement running round the inside walls at the required height and to have let the ends of the planks rest upon the ledge, a method of providing a raised floor which was familiar enough to the Romans and which would present no difficulties in a room measuring only 13 feet by 14 feet? Here, however, we are not concerned with an ordinary room. The floor of the Sacellum would presumably have to bear the weight of a statue of the Emperor as well as of one or two heavy stone altars, so that a floor supported only at the ends would be in grave danger of sagging. If the planking were laid from east to west, the greatest strain would be on a line running down the centre of the room from north to south, and it can hardly be without significance that the channel which follows that line is calculated to accommodate a sleeper that must have been considerably wider than any of the others. Its breadth of 12 inches, as against from 6 inches to 8 inches, may indicate either that here the posts have been stouter than they were elsewhere, or that there has been a double row of them.

Except for the analogy from the wooden bridge at Jagsthausen, which is not, after all, an exact parallel, these stone-built trenches appear to be unique. Other interpretations of their purpose than that given above could, no doubt, be suggested. Professor Fabricius, for instance, wondered whether the timber framework, attested by their presence, might not have been merely the foundation of an ordinary wooden floor, the planks of which had been nailed directly to the sleepers. In that case,

however, one would have expected to find sleeper-trenches of the usual type in Sacella where there was no rocky bottom. On the whole, therefore, I think my own explanation may be allowed to stand, at all events on a provisional basis. Some future discovery may render a modification of it necessary. In the meantime, from the point of view of the excavation, it is not the purpose of the channels that matters but the inference we were bound to draw from the pains that had been taken to block them: the Sacellum had certainly been reconstructed at the outset of the final phase in the history of the fort. It was natural to suppose that the reconstruction must have extended to the rest of the Principia. What survived of the walls was destined to furnish us with evidence that it had actually done so.

Stones broached on the outer face with a diamond or, alternatively, a herring-bone pattern are of more or less frequent occurrence on Roman sites in Scotland. It is generally believed that they were treated in this fashion in order that they might produce a decorative effect in a façade. One unmistakable instance of their being so employed is on record. At Birrens the stones in the front of the large buttressed building, which ran lengthwise along the south side of the eastern half of the Via Principalis, all showed "diagonal lines forming a reticulated or diamond pattern of half-inch to inch mesh within a chiselled margin." Mr Barbour adds: "This wall is of superior and artistic workmanship, and the great care bestowed upon it is doubtless due to its prominent position in the main street." [1] Here then the broached stones were turned to account exactly in the manner we should have anticipated. As a rule, however, the structures with which they are associated are in a ruinous condition, and they themselves are either lying loose or built into quite modern walls and dykes. In these cases we cannot, of course, be certain how they were originally used. Still, in the light of what undoubtedly happened at Birrens, it is fairly safe to guess.

It follows that, if they appear in isolation in inconspicuous parts of walls of Roman date, there is at least a presumption that they are no longer in the position which they were in the first instance designed to occupy, but that they have been taken from an older building and re-used. At Croy Hill the presumption became a certainty when we found several built into the inside—not the outside—of the Principia walls, and built into them moreover at so low a level that the broaching could not have been noticed by anyone unless it were specially looked for. There were two or three not far from the north-east corner of the Ambulatory, and in the west wall of the most westerly of the range of five rooms at the back

[1] *Proceedings*, vol. xxx. (1895-96), p. 119.

there was another (fig. 6), placed where it can hardly have been visible at all when the room was in use. Doubtless the devil's advocate might suggest that the dressing had been done at the quarry on the chance that such stones would be wanted for a façade, and that, when it turned out that they were not needed, they had been utilised wherever they happened to fit in. The suggestion may be ruled out at once. The stones for the

Fig. 6. Diamond-broached stone, built into lowest course of the inside face of W. wall of the Principia, near S.W. corner.

building were dressed upon the spot. That is proved by section E–F (Plate III.), from which it will be seen that, as the underlying rock tends to rise, the stones of the lowest course of the wall are carefully graduated in thickness in order to provide a flat surface for the course immediately above to rest upon. So nice an adjustment would have been impossible, had the hewing not been done close at hand.

The high quality of the masonry all over may be judged from fig. 7, which gives a view of the section that was best preserved. Specially instructive is the 8-inch scarcement which can be seen in the left foreground. This projection begins at the north-east corner and runs westwards along the outer face of the front wall, gradually narrowing until it disappears completely by the time the entrance is reached. As

there is no trace of any similar scarcement elsewhere, one may wonder why it should have been thought necessary at this particular point. The answer will be found in section E–F (Plate III.), which reveals the fact that just here the rock drops rather suddenly down towards the level of the gutter. Evidently it was felt that, to obviate any risk of collapse, some extra support was required. This, like the nicety of adjustment referred to above, is a clear indication of the general soundness

Fig. 7. Remains of N.E. corner of outer wall of the Principia.

of the workmanship, a feature which it is perhaps permissible to connect with the circumstance that the only troops whom the inscriptions allow us to associate with the fort were legionaries.[1]

That, however, is by the way. The more carefully the walls were examined, the more convincing did the proof of reconstruction become. Although there is nothing in fig. 7 to indicate any lack of correspondence between the foundation and the fragment of walling still *in situ* above it, what happened in some other places made it more than doubtful whether foundation and superstructure had formed part of the same design. Thus, in the inner face of the west wall of the Sacellum the projection of the foundation increases from only 10 inches at the northern end to as much as 1 foot 10 inches at the southern one. Similarly, it will be

[1] *Roman Wall in Scotland*, 2nd ed., pp. 401 f. and 423 f.

evident from section E–F (Plate III.) that the north wall of the *armamentarium* has not been built centrally on the foundation. More remarkable still, the north-east corner of the foundation of the low wall surrounding the Outer Court has been laid upon the square, whereas the angle of the superimposed masonry has been rounded (fig. 8). It is natural to presume that the same thing happened at the north-west corner. Further, the clay employed in the foundations was everywhere

Fig. 8. N.E. corner of wall of Outer Court, showing lack of correspondence between foundation and superstructure.

of a bluish tint, whereas that used higher up for binding the stones together was always of a pronounced yellow, having obviously been taken from a different pit. Though very suggestive, the contrast was not conclusive. Final confirmation was furnished by the partition which divided the Cross Hall from the Ambulatory and the Outer Court. This must be described in some detail.

The masonry of the partition had been 'mortared' throughout with yellow clay. The foundation, on the other hand, was not homogeneous. The only portions of it in which blue clay appeared were the returns of the wall which enclosed the Outer Court. The remainder contained no clay at all, but was simply a bed of smallish stones, unmixed with any cohesive material. As will be seen from Plate II. and section C–D (Plate III.), we must conclude that only in the final phase has the dividing

wall extended all the way from east to west. During what I may venture to call the blue-clay period both ends of the Ambulatory had been open to the Cross Hall. On the evidence available it is not possible to say anything very definite as to what the space between the two returns was then like. The screen was apparently something less substantial than the stone wall of the final phase, and there was certainly a central door. More might have been learned, had we removed the dry-stone foundation, but to do so would have been inconsistent with our policy of interfering as little as possible with the existing remains. Here the question at issue was not of sufficient moment to warrant us in disturbing them unduly.

From the central doorway just referred to we secured a valuable piece of information. The road that passed through it turned out to have two levels, the earlier—the position of which is marked by the two stones that are shown here in section C–D—being 4 or 5 inches lower than the later one. Not only, therefore, had there been two distinct occupations, but a considerable interval of time had elapsed between the beginning of the blue-clay period and the beginning of the yellow-clay period that had followed it. In other words, the blue-clay period had been a long one. Two periods, however, were not enough. On the analogy of other forts on the Vallum we should have expected to meet with three. Moreover, at Croy Hill itself three occupations were vouched for by later discoveries on the Military Way and in the Granary. A fresh scrutiny of the evidence from the Principia seemed to be required, and in due course the scrutiny bore fruit. It should be added that, before beginning it, I had realised that what had to be looked for were vestiges of the first of the three Antonine occupations of the site, for there could be no doubt as to our having already established contact with the last phase of all and also with its immediate predecessor. Here is the result.

When uncovering the remains of the partition represented in the section C–D (Plate III.), we had been somewhat puzzled to account for a posthole near the centre of the passage through the western entrance to the Hall, at the point marked X in Plate II. It was about 15 inches deep and had a packing of stones in the bottom. That there could not have been a post there during the final phase, when the passage was in use, was clear, but it was almost equally clear that it would be difficult to fit the hole into the blue-clay period, since the distance between it and the ragged edge of the foundation to the west was not more than 3 feet, leaving a space which would have been unnecessarily narrow. Farther east, again, immediately to the north of the point marked

Z in Plate II. and on the west face of the projecting hump, a shallow hole had been cut in the rock at an angle and to a depth quite unsuitable for supporting a post that was to stand upright but well adapted for keeping the end of a strut steady. This was not much more than 2 feet west of the face of the foundation of the adjoining return, too close therefore to have formed part of the same construction. Had one not felt confident that there was a period still to be found, one might have hesitated to attach much weight to such faint indications. As it was, it seems justifiable to explain these holes as the scanty remnant of a screen of timber, or of wattle-and-daub, which had belonged to the earliest Antonine Principia. It will be remembered that the corresponding partition at Melandra underwent a similar transformation, as was proved by the finding of the stumps of the oaken posts that had held the original screen together. They were immediately in front of the line of the stone wall that had been substituted for it, and were the only recognisable relic of its predecessor.[1]

Gathering up the threads of evidence, so far as they have been disentangled, I would summarise as follows the conclusions that may be more or less safely drawn as to each of the three stages in the history of the Principia.

First Period.—About the building that was first erected we know practically nothing that is certain, except that it must have stood on the same lines as those on which its two successors were reared, and that the screen which divided its Outer Court from its Cross Hall had had a framework of timber. Even as to the character of its main walls we cannot say anything definite, although the difficulty of building in wood on this particular site makes it probable that they were of stone, in which case the blue-clay foundations of the outer walls were possibly original.[2] The arrangement of the Outer Court is wholly doubtful, as is also that of the Sacellum.

Second Period.—When we come to consider the Granary, we shall see that, whatever may have been the case in the First Period, the use of blue clay was characteristic of the Second. There is some reason to think that it was at the outset of the latter that the low wall enclosing the Outer Court was inserted. The intervals separating the ends of the two returns from the holes for timber supports to which they are respectively adjacent are so short—just

[1] See *Classical Association, Manchester Branch*, 2nd Report (1909), p. 28 and pl. 8.

[2] Part of the side of an amphora was embedded in the blue-clay foundation of the west wall, close to the point where that wall was joined by the dry-stone foundation of the later cross-wall. Unfortunately it had no characteristic features such as would have given a clue to the date of the vessel to which it had belonged: it might have been either Agricolan or Antonine.

over 3 feet in the one case and just over 2 feet in the other—that wall-returns and timber supports can hardly have belonged to the same system. The idea that the wall belongs to the Second Period is perhaps strengthened by the slight lack of adjustment between it and the outer walls of the building: it does not sit squarely inside of them (Plate II.). For the rest, during this Period there appears to have been direct access from the corridors of the Ambulatory to the Cross Hall, while the sleeper-trenches in the Sacellum, whatever their purpose, were unquestionably in use.

Third Period.—At the opening of the Third Period the main walls and the wall round the Outer Court were rebuilt on the earlier foundations. These walls were 'mortared' with yellow clay. Simultaneously the passages from the Ambulatory to the Cross Hall were blocked by a new wall which was carried right across the building, incorporating the returns of the earlier period. This wall, too, was 'mortared' with yellow clay, and, where a new foundation was needed, it was laid in dry-stone, the material used including broken pieces of building stones and a large flag which had at some time been exposed to fierce heat. The sleeper-trenches in the Sacellum were thrown out of service and filled in, and the low wall round the Outer Court was rebuilt, the two northern angles being rounded. There were certainly two, and almost certainly three, doors between the Outer Court and the Cross Hall.

Mention has still to be made of a curious built channel (Y on Plate II.), which ran along the centre of the Ambulatory, underneath the paving. Though rather less carefully constructed, it bore a general resemblance to the built sleeper-trenches in the Sacellum, differing from them, however, in one important respect. Its width, instead of being approximately constant, displayed remarkable variation. For the greater part of its length it measured 12 inches—or only slightly less—across, but at one point it narrowed quite suddenly to about 2½ inches, the constriction being clearly premeditated (fig. 9). Even if this alone had not been sufficient to rule out the idea that it was a drain, other and more conclusive arguments against such an explanation could be adduced. At the angle Y the bottom of the channel was no more than 1 inch higher than it was at the east end, which abutted on the roadway leading to the Outer Court, and yet the distance traversed in the interval was 19 feet. Again, although the trend from Y in a southerly direction was, on the whole, downwards, the stretch of 17 feet ended abruptly against the face of a boulder.

The constriction and the rounded angle render it almost as difficult to believe that the channel has been a sleeper-trench or, rather, two sleeper-trenches. Yet it is hard to see any other way of accounting for it. And, even if that view be accepted, to what use can the sleepers have been put? The possibility that they might somehow have marked the limit of the Outer Court of the original Principia naturally occurred to us, but the idea lost all plausibility when the most diligent search failed to reveal

Fig. 9. Built channel underneath the floor of the Ambulatory, showing constriction. The stone in the foreground is displaced.

any trace of a corresponding channel in the eastern half of the Ambulatory. The one thing certain is that the sleeper-trenches, if sleeper-trenches they were, had ceased to be of any value when the Third Period opened, seeing that they were buried beneath the paving of the final phase. On the other hand, while the line followed by the channel (fig. 10) conforms fairly closely to that followed by the foundation of the wall enclosing the Outer Court, its rounded angle would have accorded better with the presumably [1] rounded corner of the superstructure of the Third Period than it does with the square corner of the foundation itself, an accord which tempts one to think that the channel must after all be connected with the final phase in the life of the building. As Mr Richmond has pointed out to me, the apparent contradiction might conceivably be resolved, if one could

[1] See *supra*, p. 48.

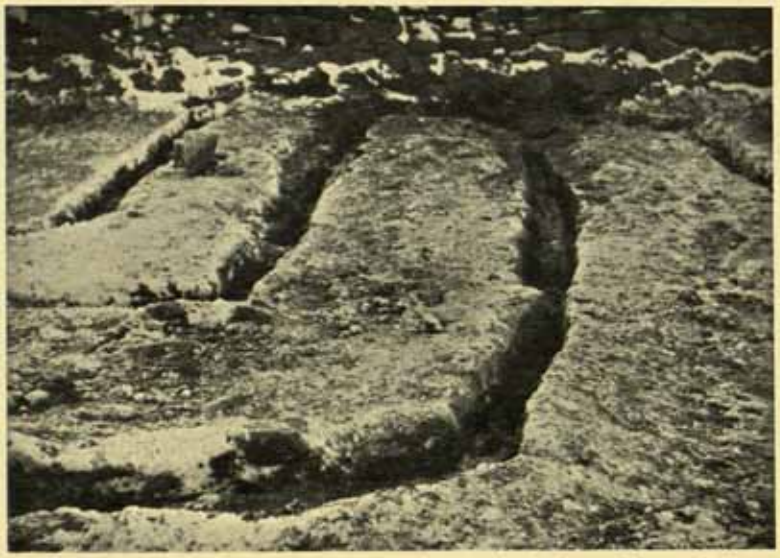


Fig. 10. Rounded angle of built channel underneath the floor of the Ambulatory, contrasted with square N.W. corner of foundation of wall of Outer Court.

Fig. 11. View of the Sacellum, looking S., with stones laid across the entrance.

suppose that the sleeper-trenches, always assuming that that is what they were, had had something to do with a temporary arrangement, such as a shed to shelter the hewers when the Principia of the Third Period was being erected.

Two somewhat equivocal features of the Principia, as it appears on Plate II., call for a word or two of notice before we pass out of the entrance and on to the Military Way. The first is the line of stones, hatched on the plan, which extends almost all the way across the entrance to the Sacellum (fig. 11). These had certainly been shaped by the Romans, but whether the Romans had placed them in the position in which we found them is another question. On the whole, I am disposed to think not. Their setting was neither firm enough nor close enough to admit of the supposition that they represented the remains of a threshold. More probably they had been laid at some later time for a purpose which can no longer be guessed. We shall presently meet with something very similar in the Granary. The second equivocal feature is the 'pit' immediately to the east of the entrance. When we first realised that the ground there had been previously disturbed, there was a momentary flicker of hope that we might have hit upon a well. We were speedily disillusioned. The hole, whose irregular shape is indicated on Plate II., was not more than 1 foot 8 inches deep, and its contents were rubbish, modern pottery and—at the very bottom—a clay tobacco-pipe, made in London.

The Military Way.

Although the term 'Military Way' is used for the sake of convenience, it will be evident from Plate I. that our investigations were confined to that part of the thoroughfare which served as the Via Principalis of the fort, but that at the same time they extended to three of the streets debouching upon it, including that which led from the north gate. They began with the cutting of a cross-trench immediately opposite the entrance to the Principia. Subsequently, following up lines of inquiry that suggested themselves naturally, we dug a little farther, both towards the east and towards the west. To make the situation clear, it should be mentioned that the ground begins to fall rather steeply just beyond the northern edge of the Way itself. This probably explains the presence of the accumulation of 'large stones' which is marked on Plate II. They form a sort of embankment which would counteract any tendency to subsidence under the pressure of traffic. It will be remembered that at

the north-east corner of the fort the northern margin of the Antonine Rampart was strengthened in very much the same fashion.[1]

The gutter proved to be intact all along the front of the Principia, although full of stones. On the other side of the street only a single fragment of it had survived. A measurement taken between the inner edges of the two gutters at this point gave a width for the roadway of 17 feet 4 inches. While there seemed to be only one level within the entrance to the Principia, the trenches cut from north to south across the road revealed the same two levels as had been observed at the entrance to the Cross Hall. But in this case the lower of the two gave us information of great interest. Its surface had been repaired, and some of the stones used for repair had evidently come from a building which had been destroyed. Here then was indisputable evidence of three periods. So much of the lower surface as was original had belonged to the First Period, and so had the building from which the re-used stones had been taken. That the Period had been relatively short was suggested by the fact that no raising of the surface was felt to be necessary when the road was reconditioned at the beginning of the Second Period. Further, that the Second Period had been much longer than the First was manifest from the marks of traffic which the stones, including the building-stones, bore upon their upper sides.

Additional evidence of change was obtained farther east, when an examination of the ground outside the north-east corner of the Principia led to the discovery that for a certain distance beyond that—to be precise for rather more than 14 feet—the gutter had been filled with stones from top to bottom. The filling was buried beneath a stratum of cobbles, the latter on the same level as the upper or Third Period surface of the Military Way. This meant that the street coming from the south (Plate II.) had been reconditioned at the same time as the Military Way, which it joined here. When that was done, it had not been thought worth while to provide a new gutter. Indeed, steps seem to have been taken to put the old one entirely out of action, for the filling of stones extended all along the front of the Principia. We endeavoured to lay bare the original surface of the side street, as it passed outside the east wall of the building, but the attempt was fruitless. The rock rose so high—for a few feet it had actually served as one side of the east-and-west gutter—that all that had been necessary was to 'blind' it by a thin spread of looser material, which had mingled indiscriminately with the new surface when the latter was laid.

I have already mentioned that a solitary fragment of gutter survived

[1] *Proceedings*, vol. lxvi. (1931–32), p. 247.

on the north side of the Military Way. It lay to the west of the entrance to the Principia, and it was destined to play a far more important part in the reconstruction of the story of the fort than we dreamed of when we lighted on it first. What that part was, will appear presently. Meanwhile I must so far anticipate as to say that it guided us to a building with a north-and-south alinement, of whose existence we had previously had no suspicion (Plate II.). Down each side of this building there had originally run a cobbled street, that on the east being the Via Praetoria which led to the north gate of the fort. During the Third Period the whole area within which these two streets lay, including the building

Fig. 12. Cobbling of Via Praetoria, covered by spread of later cobbling, on which rest the feet of the standing figure.

between them, had been covered with a spread of cobbling, and they themselves seemingly obliterated. But by removing a portion of this cobbling we were able to rediscover their surfaces underneath (fig. 12 and section G–H, Plate III.). It will be obvious that the 'large stones' can hardly have been piled against the northern embankment of the Military Way until after the street, whose passage they would have obstructed, had been incorporated in the larger cobbled space. They too, therefore, like the cobbling, must be assigned to the final Period.

The Granary.

I pass now to the solitary fragment of gutter which we found in the Prætentura. It lay at the western angle of the junction between the Military Way and the Via Praetoria. A glance at Plate II. will show that

at some time or other during the Roman occupation the east-and-west section of it has been partially but permanently interrupted by a buttress which projected to the south and which was plainly of later construction (fig. 13), while the north-and-south section was similarly interrupted by a second buttress which jutted out eastwards. It has

Fig. 13. Fragment of gutter on S. side of Granary, partially blocked by foundation of later buttress, looking E.

already been stated that the building to which these buttresses belonged lay under the very same layer of cobbling which concealed the streets during the Third Period. The building so buried must therefore be attributed to the Second Period, and the gutter which it threw out of action to the First. The latter is thus a remnant of the original layout of the fort. Further than this I do not venture to go. The gutter is certainly suggestive of an eavesdrop, and, if that be its significance, the structure to which it was related must have stood immediately

behind it. On the other hand, it is just possible that its sole purpose may have been to drain the Military Way.

The Second Period building, to which our First Period gutter had thus guided us, turned out to have been about 41 feet long and 12 feet wide internally, with walls about 2 feet 8 inches thick (Plate II.). There had been three buttresses at the north end and six along each side, but only two at the south end, where a space had been left in the middle for the entrance which, as usual, had been from the main street. Of one of the buttresses on the west side and of the four in the centre of the east side, as of the walls which they had supported, we could find no remains whatsoever. The foundation trenches here must have been very shallow, for the rock was but thinly veiled by the disintegrated material which overlay it. Alternatively, it is perhaps just possible that a foundation may have been dispensed with altogether and the stones laid directly upon the rock, as had happened at one point in the Principia. In any event, the destruction that preceded the condition to which the area was reduced in the Third Period must have been thorough-going in the extreme, since even the smallest trace of clay was sadly to seek. Elsewhere the whole outline could be followed without difficulty, if often only by the aid of the clay foundations, while at the north-west corner, where the ground dips into a pronounced hollow, the masonry was still standing three or even four courses high (fig. 14). The stones were larger than in the Principia, being from 11 inches to 13 inches long and 5 inches deep on the face, and they often lacked the usual tusking at the ends. But the most significant difference was the complete absence of any sign of yellow clay. Alike in the foundations and in the 'mortaring' of the superstructure we encountered only the blue clay with which the foundations of the Principia had already made us familiar. That is, the whole building had been erected in the Second or blue-clay Period, a conclusion already deduced from its position under the Third Period cobbling.

Its plan left no room for doubt as to the purpose for which it had been designed. The buttresses were unmistakable pointers. Two seeming departures from the normal can be readily accounted for. In the first place, a characteristic feature, which we have learned to associate with the granaries of Roman forts in Britain, was lacking: there was no evidence of any provision for ventilation beneath the floor. But, after all, that is hardly matter for surprise. It would be unreasonable to expect that pilasters or dwarf-walls should have escaped when so much that was more substantial had been utterly destroyed, and it may be recalled that at Cadder, where there had been no cobbling spread over the remains, the only indication of a raised floor was supplied by traces of a

single dwarf-wall in the more southerly of the two granaries.[1] Again, the situation appeared to be somewhat unusual. As a rule, such buildings lay in the *latera praetorii* alongside of, or at least parallel to, the Principia. At Birrens, however, there was a very large granary in a position corresponding almost exactly to that occupied by the one we are now

Fig. 14. Remains of W. wall of Granary and of buttress at N.W. corner, looking N.E.

considering, the sole difference being that it was its side, and not its end, that was presented to the Via Principalis.

The analogy of Birrens is helpful in another way. There the granary in the Prætentura was additional to the allowance of two in the *latera prætorii*, which was normal for a fort of the size. That the Croy Hill example was also additional would be a fair inference from the fact that it seems to have been in existence during the Second Period only. Confirmation is furnished by its relatively small dimensions. In other forts on the Antonine Vallum the granaries, besides being in most cases much wider, are generally more than twice as long. Of the exceptions, the two at Cadder, which were 66 feet in length,[2] were respectively 20 and 22 feet in breadth, and the single granary at Rough Castle measured 67½ feet by

[1] Clarke, *The Roman Fort at Cadder*, p. 42.

[2] I take this figure from Mr Clarke's text (*op. cit.*, p. 41). According to his plan, the internal length was 70 feet.

15½ feet. Comparing these figures with 41 feet by 14 feet we may conclude that at Croy Hill there had been, in all three Periods, at least one granary in the *latera prætorii*. To judge by the dimensions of the Principia, it (or they) would be rather more than 60 feet long. As to the breadth, we know nothing.

The examination of the interior raised a number of puzzling questions, not all of which perhaps admit of an entirely satisfactory answer. There had been so much interference with the original structure that the data were at once scanty and confused. But it was quite certain that there had been several alterations. I will begin with what was the most obvious and in all likelihood also the earliest of these.

It will not have been forgotten that the entrance had been at the south end. We could see nothing of the doorway nor of the 'loading platform,' which presumably once stood in front. The platform would naturally be removed not later than the beginning of the Third Period, when the Granary was cobbled over and the Military Way reconditioned; as there were no longer any stores to be handled, it would have been a mere obstruction. In the interior, however, starting from the west side of the entrance gap, a built channel, 6 or 7 inches wide, ran northwards down the centre of the building to the opposite end. Many of the flat covering-stones were still *in situ*, and their removal enabled us to see the reason for the curiously sinuous course which the channel had pursued (Plate II.). Its windings had been dictated by a desire to avoid doing more than was absolutely necessary in the way of cutting through the rock, which was, in fact, for some distance utilised as one side of the conduit (fig. 15).

I have called the channel a conduit, because it can only have been intended to convey water. This was not, indeed, immediately apparent, for its upper end abutted directly against the inner face of the clay foundation of the south wall, and it was difficult to guess where the water could have come from. Moreover, it looked like an obvious breach of architectural orthodoxy to lead a drain beneath the floor of a building, especially when that building was a storehouse.[1] On the other hand, there were no marks of fire or of soot, such as a flue would inevitably have borne, while an air-duct would have been meaningless if (as we must suppose) the floor above it was raised for ventilation purposes. What happened at the lower end is illuminating. No provision had in the first

[1] Mr Clarke found a channel running down the centre of the more northerly of the two granaries at Cadder. There was evidence that it had been a drain, but one belonging to an earlier occupation and having no connection whatever with the Antonine buildings (*op. cit.*, p. 42). The analogy, therefore, does not help us here. No similar explanation could account for the Croy Hill example. A much closer parallel is the irregular seepage drain underneath the Cross Hall ('inner court') at Housesteads (see *Arch. Ael.*, n.s. xxv. p. 216). As Mr Richmond pointed out to me, there too the top of the rock is close to the surface, and it would absorb no water.

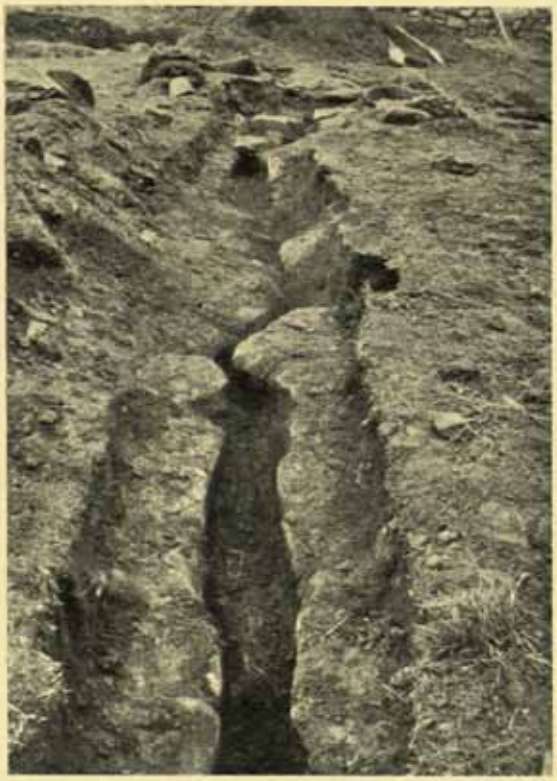


Fig. 15. Conduit beneath floor of Granary, looking N. towards the 'rough wall.' Beyond the curve in the middle distance the W. side is formed of solid rock.

Fig. 16. Looking N.W. towards N.W. corner of Granary. Note passage broken through N. wall for exit of conduit; the stone to the right of the mouth is diamond-broached. Note also the two varieties of cobbling, for which see p. 63.

instance been made for an exit there and, after the building was completed, a passage had to be broken through the north wall (fig. 16), its line being deflected in order to avoid the central buttress (Plate II.). We cannot but conclude that the insertion of the conduit was an afterthought.

This helps us to understand it. Its function was obviously to help in keeping the neighbourhood of the entrance and of the loading platform free from damp. But why was that help required? The loading platform would stand exactly on the watershed between east and west, and apparently the original expectation was that, despite the intrusion of the buttresses, there would still be sufficient room (fig. 13) for the gutter on either side to function adequately. It must, however, have been found that water tended to accumulate on the west, and it was therefore decided to get rid of the surplus by leading it through the adjacent wall and then by a drop-pipe down into the upper end of a channel under the floor of the building. The conduit was thus an overflow, and the breach of architectural orthodoxy may be condoned in the light of the knowledge that it was a mere *pis aller*. The risk of damage to the contents of the Granary would be negligible, since it would only be after rain that there was any flow at all and, unless the rain were torrential, the flow would be little more than a trickle. Besides, there would be a clear and well-ventilated space of 10 or 12 inches between the cover-stones of the channel and the bottom of the raised floor. Nevertheless it may be asked why even a negligible risk should have been run, when it would have been a simple enough matter to relay the gutters on a line that would be quite clear of the buttresses. The suggested solution ignores the fact that this would have reduced the width of the two streets to an extent that might have had awkward consequences. What is really surprising is that the full effect of the partial blocking of the gutters was not fully appreciated when the Granary was designed. The insertion of the overflow was the penalty that had to be paid for taking too optimistic a view of the weather conditions on Croy Hill. There was nothing to give a hint as to when the alteration was made. But the Granary can hardly have been very long in use before it was realised that some further provision for street drainage was essential. The windings of the conduit suggest that the raised floor was supported on pilasters rather than on dwarf-walls.

Presently there was to be a much more drastic change. The evidence bearing upon this is not easy to marshal, although its cumulative effect is irresistible. The facts are as follows. After leaving the inner face of the south wall, the conduit was almost intact for a distance of 28 feet, reckoned in a straight line and without taking account of its

sinuosities (Plate II.). At that point its course was interrupted by a block of rude masonry which we called the 'rough wall,' a name which it will be convenient to retain here, even although it is very doubtful whether it had ever been a wall in the ordinary sense of the term. It measured 4 feet from north to south between two more or less finished faces, and about 3 feet from east to west between the broken and ragged edges of a rubble core. The likelihood of the conduit having ever functioned through it is small. The whole construction left the impression of workmanship so poor that it was hard to believe it Roman. It is true that we noticed at the west end a stone which looked rather like a channel stone, but it may have been re-used.

The 'rough wall' was 10 feet distant from the inner face of the wall of the Granary itself. In the interval the ground falls away so quickly that, when the original building was in being, the pilasters or dwarf-walls supporting the floor must here have been higher, sometimes as much as 1 foot higher, than they were farther south. Unless they had been so, the floor, instead of being level, must have been stepped, which seems in the last degree unlikely. As we found it, the whole of the area in question was covered with cobbling. On the west side, and for more than half the distance across, the cobbles were large and included pieces of freestone which had obviously come from a demolished building. Two or three of them were lifted and subsequently replaced. Under one we discovered the remains of the conduit, and under another (section I–J, Plate III.) a hole, some 14 inches deep, which contained, *inter alia*, a scrap of coal. The surface of this heavy cobbling lay level with the top of the surviving portion of the Granary wall, and both cobbles and wall-stones bore marks of wear by traffic. Its southern edge lay under the northern part of the 'rough wall,' a convincing proof that it was earlier in date. I hesitate to offer any explanation of its significance. At one time I was disposed to think that it might have been a new east-to-west thoroughfare. But it is difficult to reconcile that idea with the evidence of section G–H, which shows that it was on a higher level than the original cobbling of the roads on either side. Besides, it was almost too carefully laid to be the surface of a road. It was more like a paved floor.

On the east side of the area the cobbling was of quite a different character. It was composed of smaller stones and was in fact identical with that which has already been spoken of as covering the streets (fig. 12), as well as the whole of the rest of the building to the south. Here it extended northwards over the eastern and more ruinous end of the north wall of the Granary. The contrast between the heavy and

the light cobbling, and also the relation of the former to the Granary wall, is well brought out in fig. 16 and section G–H (Plate III.). In connection with these it should be explained that the space, which appears immediately in front of the wall in the illustration, is the result of some of the cobbling having been cleared away in order to permit of an examination of the wall-face, and that the 'top layer' shown in the section, where it is marked as 'modern,' was thinner and contained an admixture of fragments of pottery not more than two centuries old.

These are the data so far as we were able to ascertain them. Their significance for the history of the quarter of the Prætentura concerned, and in particular for the history of the Granary, may be summarised as follows:—

First Period.—It is impossible to speak definitely as to the use, if any, to which this part of the site was put when the fort was originally laid out. It may have been left entirely empty. On the other hand, a suggestion that it may have had on it a building or buildings is implicit in the survival of a portion of a gutter which may quite well have been an eavesdrop.

Second Period.—When the fort was restored at the beginning of the second occupation, a small Granary was erected on the spot. That it was not the principal storehouse may be inferred from its comparatively small size and also from its unusual position, one result of which was that the projecting buttresses partially blocked the gutter that had previously drained the north side of the Military Way. The full effect of this does not seem to have been foreseen, for the inconvenience it produced turned out to be more serious than had been anticipated. To prevent the accumulation of water, an overflow conduit was inserted under the floor of the Granary, starting immediately to the west of the doorway and discharging by a passage that was broken for it through the north wall of the building.

Experience proved that, after all, the extra space for stores was not required, and there may have been other motives prompting a change. At all events, drastic alterations were by and by carried out. What happened at the north end of the Granary seems plain enough up to a point. The wall there was reduced to an average height of about 1 foot 3 inches and utilised as the northern edge of a new surface, the main part of which was constructed over what had been the interior of the building, the natural hollow being filled up and then covered with heavy cobbling at the same level as

the top of the surviving part of the wall. The new surface must have been 15 or 16 feet broad, for to the width of the wall (2 feet 8 inches) and the width of the heavy cobbling as exposed (10 feet) there must be added the fringe of heavy cobbling that lay under the 'rough wall.' The marks of wear which it bore, like those upon the lower level of the Military Way, showed that the new cobbling or paving had been in active use for a very long time. The change must therefore date from the earlier years of the Second Period.

The remaining portion of the interior—that is, the southern and larger half—cannot, of course, have been left exactly as it was before, but one can hardly venture to speculate with any confidence on the nature and extent of the modifications that were introduced. What was left may still have been used as a store, or it may have been transformed into a workshop, or it may have lain derelict as an empty space. The last possibility seems, on general grounds, the least likely, nor can the absence of any sign of a new end-wall having been erected to the south of the new surface be cited as evidence in its favour, so wholesale was the destruction that ensued after the Period had closed. The second has perhaps most to commend it. But there is nothing in the shape of positive proof. All that can be said is that here and there portions of the floor were reddened, as if by fire, and that there were traces of burning on that part of the heavy cobbling which lay underneath the 'rough wall.'

Third Period.—In the final Period the site of the Granary was covered with the same cobbling that was laid over the two streets by which it was flanked and over the Military Way, the whole being merged into one great cobbled area. This explains why it was possible to bank up the Military Way with large stones at a point lying directly in the line of the more easterly of the two streets, which was, in fact, the Via Praetoria: there would now be abundant room to pass to the west of the obstruction. Besides, in view of the character of the ground outside, the traffic to and from the north gate of this particular fort must always have been of small importance.

Incidentally, the cobbling throws some light on the treatment that appears to have been meted out to the Granary, and doubtless to the other buildings within the fort, when the Romans withdrew for the second time. Taken by itself, the levelling of the walls might have been interpreted as an operation preliminary to the laying of the cobbling and so have been attributed to the Romans

themselves. But the testimony of what I have called the 'cobbling or paving' puts that explanation out of court. At the beginning of the Third Period the western portion of it was undamaged and was incorporated with the newer cobbling just as it stood, whereas the eastern portion of it had to be replaced, clearly because it had been deliberately torn out. Such wilful destruction can only have been wrought by enemy hands.

I have already expressed doubts as to the Roman origin of the mass of masonry to which we gave the name of the 'rough wall,' and I have

Fig. 17. Group of re-used stones on site of Granary, looking E.

nothing to add to what was then said. But I must not omit to mention another feature of the Granary which is still more open to suspicion. Above the scanty remains of the west wall, close to where the second buttress from the south should have stood, was a group of stones, obviously re-used, which had been placed end to end in such a way that they give the impression of a threshold (fig. 17). It will be seen from the illustration that they were not covered by the cobbling, while Plate II. shows that they are out of alinement with the wall on which they lie, circumstances from which it might fairly be argued that they have nothing to do with the Granary and even that they are not so early as the last of the Roman periods. On the other hand, they were laid directly on the clay of the foundation, with no cobbles beneath them, and this, combined with the apparent absence of the buttress one naturally looks for here, might suggest that they represent the original entrance. So far as we know,

however, access to such buildings was always had from the end, the bins being ranged on either side of the central passage on to which the door opened. On a balance of considerations I am prepared to class this group of stones with the stones that had been laid across the threshold of the Sacellum, and to regard both sets as a manifestation of post-Roman building activity. On Plate II. they have been distinguished by a special form of hatching.

The Finds.

Samian Ware.—Apart from a tiny chip, apparently broken from a platter, Samian ware was represented only by twenty-eight fragments,

Fig. 18. Fragments of vase of incised Samian ware. Actual size.

which were found lying against the foundations of the west wall of the Granary underneath the Third Period layer of cobbling. All had belonged to a single vessel. Most of them were very small, but those that could be fitted together (fig. 18) showed that the whole had been a vase with incised decoration, having a diameter at the mouth of $2\frac{7}{8}$ inches. Ware of this sort is very rare in Scotland; two pieces of it were picked up at Castlecary,[1] and Mr Curle tells me he remembers noting one at Newstead. It occurs more frequently on Hadrian's Wall, usually in Severan associations. Its emergence north of the Tweed, however, proves that it had begun to find its way to Britain rather earlier. Haverfield,

[1] *Proceedings*, vol. xxxvii. (1902–1903), p. 332, fig. 31.

largely on the strength of the Castlecary evidence, put its appearance "somewhere about A.D. 170." [1] In any event it must be assigned to the late second century, and the circumstances in which the Croy Hill fragments were discovered thus become very significant, inasmuch as they make it certain that the vase reached the fort before the close of the Second Period in its history. If the Second Period lasted until after A.D. 170, it can hardly have ended before the great disaster which Dio describes as having taken place in the early years of Commodus, when "the tribes of the island, having crossed the wall that separated them from the cantonments of the Romans, wrought great havoc and slew a Roman general with the troops under his command." [2] This goes a long way to confirm the view which I have advanced elsewhere [3] as to the chronology of the history of the Vallum.

Coarse Pottery.—Four fragments of amphoræ came from the Principia or its neighbourhood: one portion of a side from the blue-clay foundation of the west wall, another from a spot which is not precisely recorded, a small piece of a second-century handle from the Cross Hall, and part of a bottom from the north-east corner of the wall of the Outer Court. The remaining sherds of coarse pottery were inconsiderable alike in number and in size.

Glass.—There were eight fragments of window-glass, reduced to five by piecing together those of them which fitted. The majority came from the floor of the Sacellum, the others being picked up in the course of filling in. All alike were noticeably thinner than is usual with Roman window-glass. It was not easy to secure exact measurements, for the moulded edge is always thicker than the rest, and sometimes, owing to the irregularity of the casting, the same fragment may vary even at a considerable distance from the edge. But the following comparative table, based on the specimens preserved in the Museum, may be taken as approximately accurate:—

Fort.	*Thickness of Window-glass.*
Croy Hill . . .	2·5 mm.
Rough Castle . .	3 mm.
Newstead . . .	3 mm.
Birrens . . .	4 mm.
Lyne	3–5 mm.[4]

At Bar Hill the average of some thirty pieces was about 3 mm.

[1] *Proc. Soc. Ant. Lond.*, 2nd series, vol. xxiii. p. 119.
[2] Dio, vol. lxxii. 8.
[3] *Roman Wall in Scotland* (2nd ed.), p. 479.
[4] A single specimen, very irregularly cast.

Iron.—There were two objects of iron: (*a*) The blade of a pointed knife, 6 inches long and $\frac{15}{16}$ inch broad at the top, and (*b*) a flat ring with an outer diameter of $2\frac{1}{16}$ inches and an inner diameter of $1\frac{1}{16}$ inch.

Stone.—(*a*) To the seven *ballista* balls from the *armamentarium* five others from different parts of the excavation have to be added. Hardly any two of the twelve were of the same size. It will be remembered that in 1930–31 we found about two dozen, and that in recording them I drew attention to the contrast with Mumrills, which did not produce a single example in the course of three years of digging.[1] (*b*) A broken whetstone, which had seen much service, was $4\frac{1}{8}$ inches

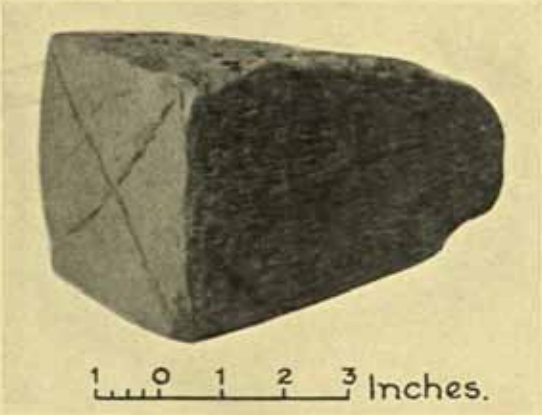


Fig. 19. Building-stone, marked on the face.

long by $1\frac{1}{2}$ inch by $1\frac{1}{4}$ inch. (*c*) A small building-stone, measuring $3\frac{3}{4}$ inches by $3\frac{5}{8}$ inches on the face and 7 inches from back to front, was marked with diagonals in the form of a St Andrew's cross (fig. 19). (*d*) A triangular fragment of yellowish sandstone, $5\frac{1}{4}$ inches along the base by 5 inches high, was chiselled with a series of horizontal lines. (*e*) Another fragment, $4\frac{5}{8}$ inches long by 4 inches high, was only $2\frac{5}{8}$ inches thick. It showed a portion of a beaded moulding and was carefully worked on the back, as if it had formed part of a tablet. (*f*) A fragment (fig. 20) which represents rather less than half of a cylindrically shaped piece of reddish sandstone, not unlike the felloe of a wheel, is probably a portion of a very much worn grindstone. It is $2\frac{1}{4}$ inches thick and is 4 inches in length, the diameter decreasing gradually from 7 inches to $6\frac{1}{4}$ inches. The inside and the edges are rough, but the outside is highly polished, as if its surface had been subject to constant friction.

[1] *Proceedings*, vol. lxvi. (1931–32), p. 267.

Miscellaneous.—A small round object of red clay, fired, about the size of a child's marble, may or may not be Roman. A small piece of daub, bearing the faint impress of wattle-work, came from the Sacellum, but is perhaps a relic of the screen or partition that at one time divided the Cross Hall from the Outer Court. As already mentioned, a few scraps of coal were found in the same place. There were others lying about the north end of the Granary. One might have been disposed

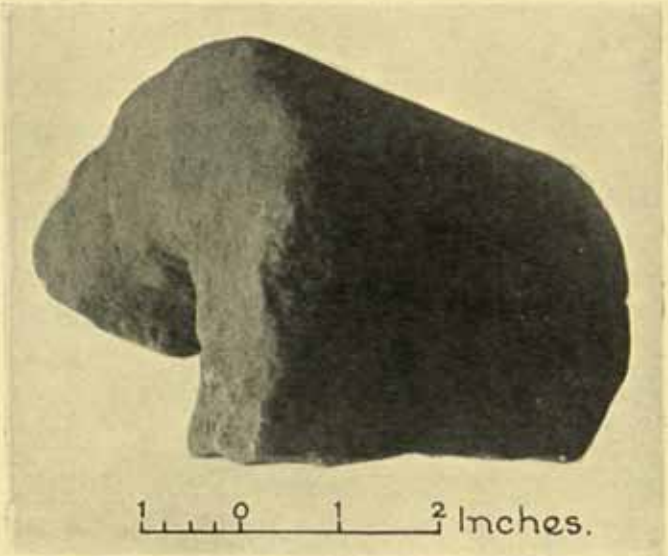


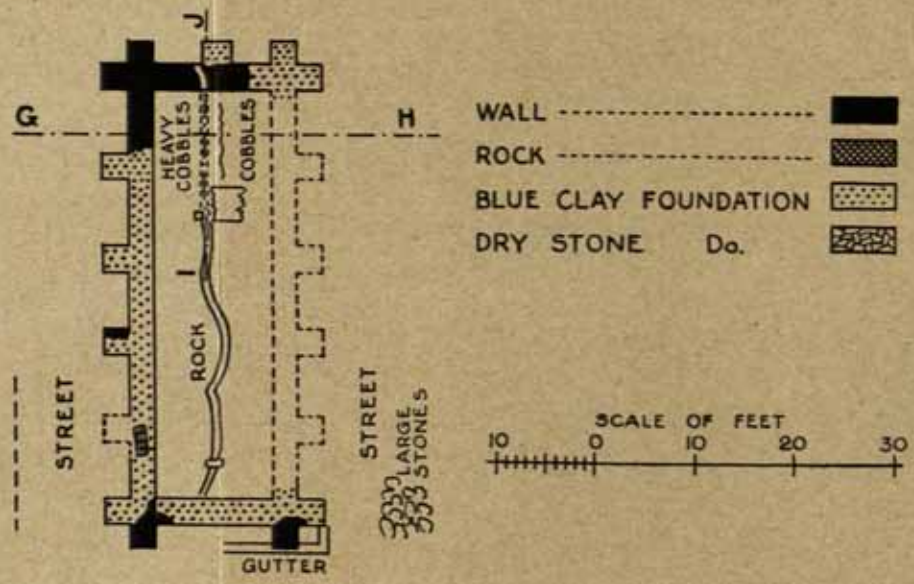
Fig. 20. Fragment of a very much worn grindstone.

to think that the latter were refuse from the days of the hamlet, were it not that one of them was in a hole beneath the heavy cobbling. But they do not justify us in crediting the Romans with coal-mining in the modern sense of the term. Doubtless, as at Bar Hill, they came from an outcrop.[1]

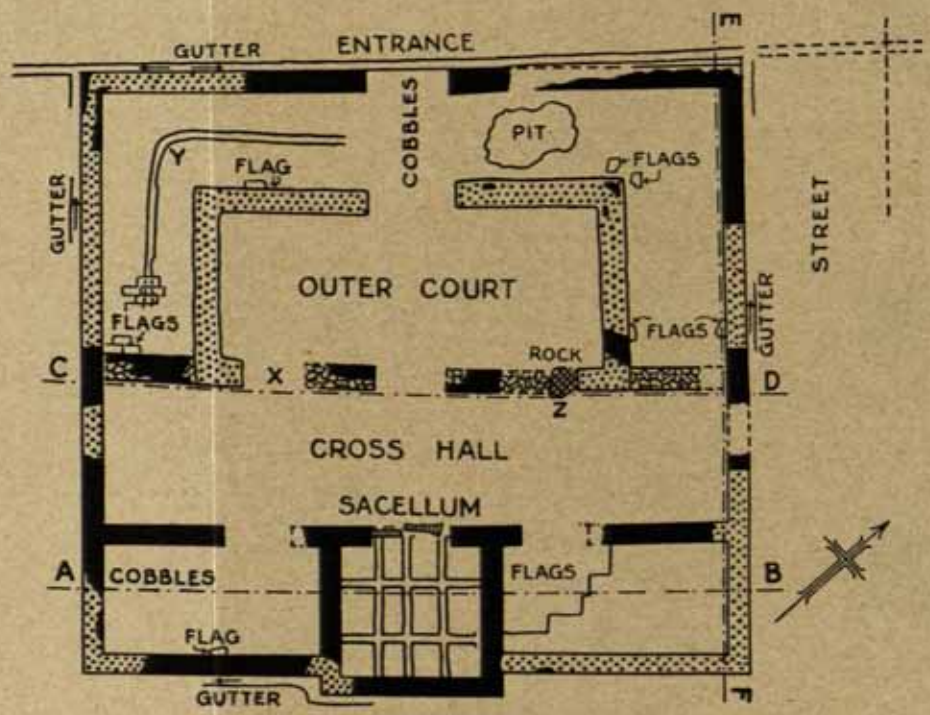
History of the Fort.

Although it has been necessary to leave some things obscure and others doubtful, it may be hoped that the foregoing description has conveyed a tolerably clear idea of the results of the excavation. If so, the historical conclusions which seem justifiable may be summed up in a few sentences.

[1] *Roman Forts on the Bar Hill*, p. 62.



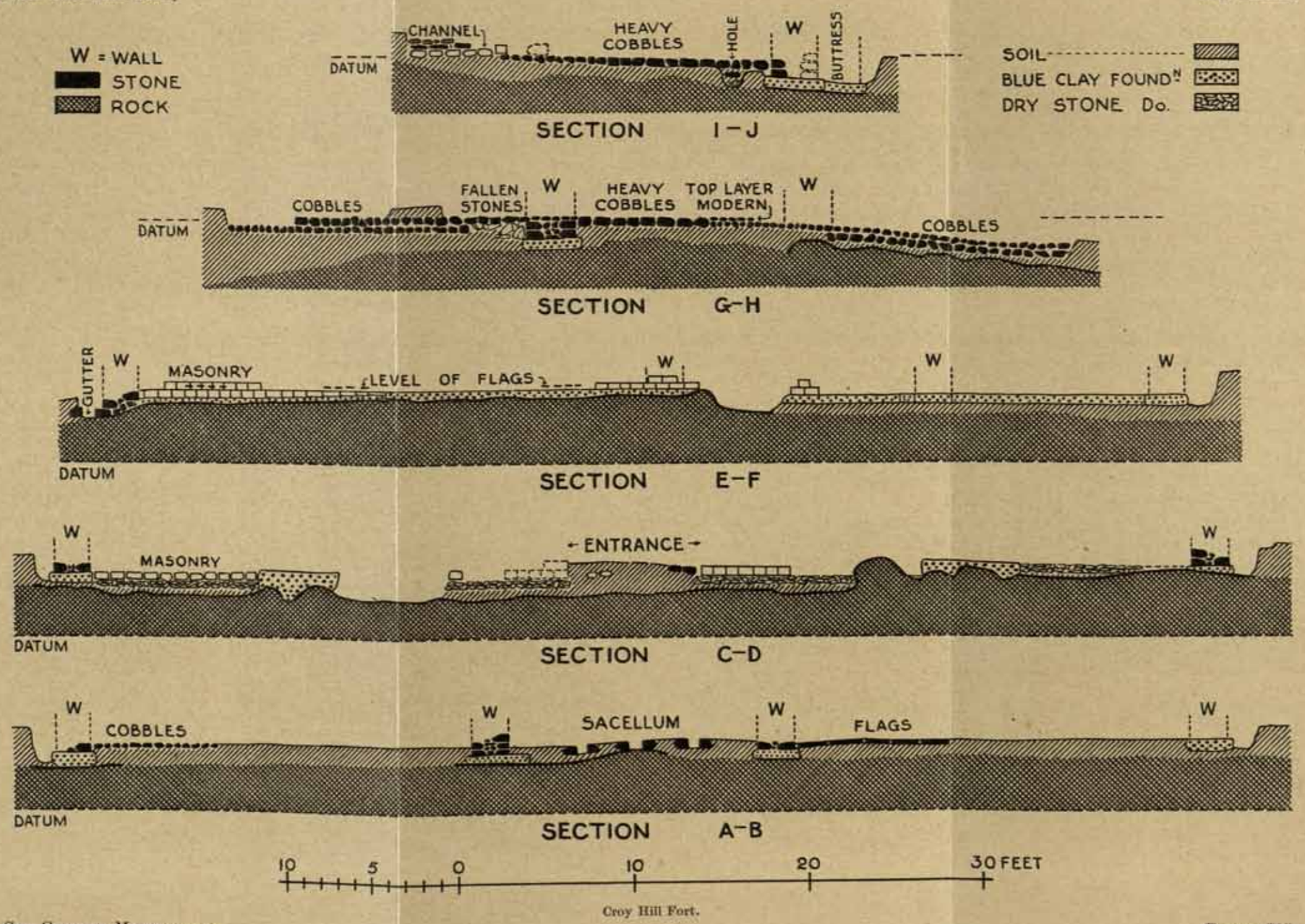
MILITARY WAY



Croy Hill Fort Excavations of 1935–36.

SIR GEORGE MACDONALD. PLATE II.

[*To face page* 70.



Croy Hill Fort.

Sir George Macdonald.

Plate III.

[*To follow* Plate II.

The *castellum* was one of the nineteen forts erected by Lollius Urbicus to defend the Vallum which he built from Forth to Clyde. This was about A.D. 142. Some years, but not very many years, later the Vallum and its forts were temporarily abandoned. It is natural to connect the abandonment with the formidable native revolt which was crushed by Julius Verus between A.D. 155 and 158, and that would be entirely consistent with what we have learned from the Military Way as to the comparatively brief duration of the First Period. When Croy Hill was re-occupied, the Principia was rebuilt, the Military Way repaired, and an extra Granary introduced in a somewhat unusual position. The Second Period lasted much longer than the First Period had done, long enough for the stones on the surface of the Military Way and elsewhere to be heavily worn by traffic, even long enough for a similar effect to be produced at the north end of the Granary after that part of the building had been in use for some time and then destroyed. We can hardly allow much less than a generation for all this to happen.

If we assume that the beginning of the second occupation coincided with the successful conclusion of the operations of Julius Verus, an appropriate occasion for its end lies ready to hand in the great war in Britain of which Dio writes. That struggle began some thirty years later or *circa* A.D. 181–184. History has nothing earlier to offer us, and it will be remembered that incised Samian ware, which is characteristic of the last quarter of the second century, was beginning to find its way to Croy Hill before the Second Period closed. This time the man who saved the situation for the Romans was Ulpius Marcellus, and it would therefore be he who was responsible for the rebuilding at the outset of the Third Period. It will not escape notice that the date so obtained for the second restoration fits in admirably with the setting up of a dedication to Jupiter Dolichenus in the Sacellum: it was under the last of the Antonine emperors that the cult of this Syrian Baal became popular in the Roman army.

The excavation did nothing to enlighten us as to the length of the third and concluding phase in the life-story of the fort. On other grounds, however, we are entitled to argue that the final occupation was very brief. Not a single coin later than the beginning of the reign of Commodus has ever been found along the line of the Vallum.

II.

EXCAVATION OF BRONZE AGE BURIAL MOUNDS AT QUANDALE, ROUSAY, ORKNEY. By WALTER G. GRANT, F.S.A.Scot.

Between the road which runs round the west side of the island of Rousay and Scabra Head, a beetling cliff that rises sheer out of the Atlantic near the south-west corner of the island, is a wide stretch of pasture-land which is known as Quandale. This ground was partly under cultivation until 1850, when the then proprietor cleared away forty-one small holdings and threw the whole area into the farm of Westness. Many of the farm buildings were rased to the ground, and only their grass-grown foundations remain to show where they stood. Parts of some of the buildings of a few survive and are used as shelters for stock. Many of the stones have gone, presumably to build a fine dry-stone dyke which runs down from the side of the road to the seashore, a distance of about 1150 yards. Its upper end commences about 120 yards north of where the road makes a sharp change of direction from north-north-west to north-east, and provides a convenient datum line for locating the monuments about to be described (fig. 1).

Eleven burial mounds were examined, and a twelfth which was opened a good many years ago will be included. There had been no wholesale interference with the monuments by the old population, as they stood on the uncultivated parts, but some of them had been dug into and cists had been exposed.

In the area north of the dyke four mounds are marked on the O.S. map as antiquities, "Knowe of Dale" and "Tumulus" three times. Three of these, including the Knowe of Dale, are "burnt mounds," [1] but the fourth, which lies highest up the slope and not far from the road, is a burial mound, and will be mentioned as No. 5 in the following list.

At a place called Knap Knowes, which is 300 feet above sea-level and some 200 yards from the roadside, the dyke runs over the centre of a burial mound, the second of a group of five. Adjoining the first of the mounds to the south-east are the grass-covered foundations of

[1] Burnt mounds are large heaps of fire-fractured stones of small size, sometimes with an admixture of soil. They are very numerous both in Orkney and Shetland, but their purpose or period has not yet been satisfactorily explained. Also see *Ancient Monuments Comm. Inventory—Orkney and Shetland.*

one of the old steadings. A mound here which was thought to be sepulchral was excavated, but it was found to cover the lower part of the farm kiln for drying corn and malt. About 290 yards south-south-west of this group of mounds, and 200 yards north-west of the

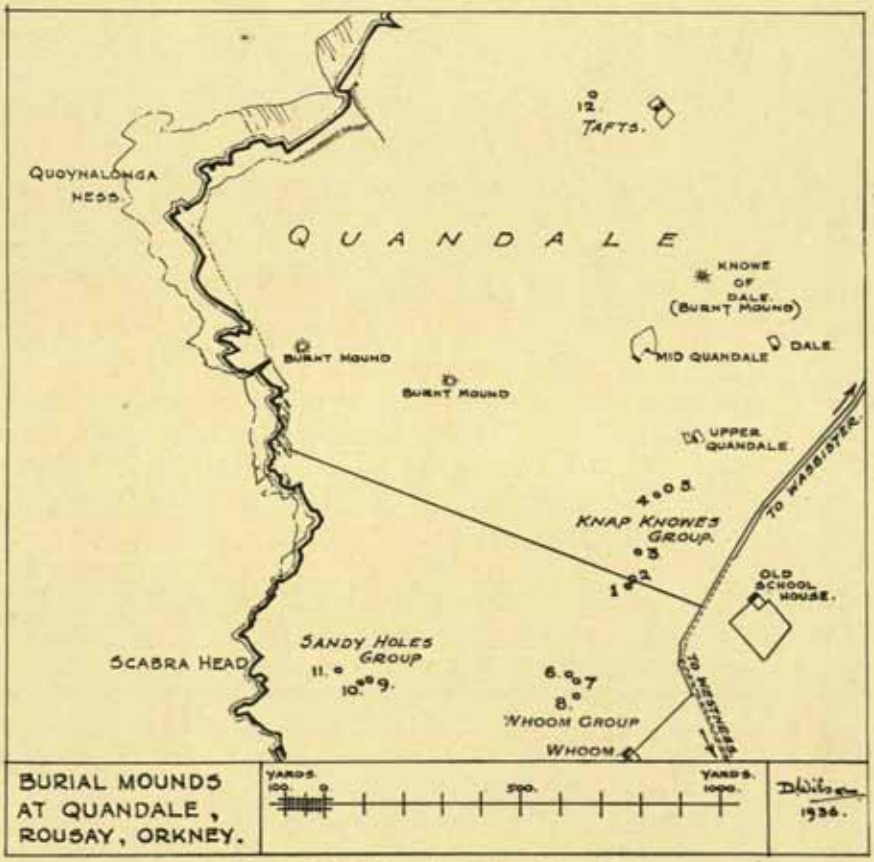


Fig. 1. Burial Mounds at Quandale: Map.

buildings at Whoom (*pron.* Home), is a group of three more, while some 540 yards down the slope from the Whoom group, and within 90 yards of the surveyors' cairn above Scabra Head, are other two raised on the summit of a short ridge with steep sides, called Sandy Holes. Near the foot of the landward side of the ridge are two small mounds, which on examination proved to be non-sepulchral, although a few small pieces of charcoal were found in them. Their small dimensions and their position on a steep slope hardly suggested that they

contained burials. A single mound lies close to the surveyors' cairn just referred to, and another 1570 yards to the north-north-east, and 155 yards west by north of the ruins of the steading of Tafts.

Mounds Nos. 1, 2, 4, 6, 7, 8, and 10 consist of heaps of yellowish clay with its natural admixture of small stones covered with a few inches of soil. Nos. 3, 5, 9, 11, and 12 are formed of earth and stones, but they are not true cairns. This, probably, is the cause of their preservation, as, if they had been made entirely of stone, they would most likely have been cleared away for building material.

To save repetition and to give some of the salient features at a glance, the following table is submitted:—

	No. of Mounds.	Diameter.	Height.	Cists.	Remarks.
		ft. in.	ft. in.		
Knap Knowes	1	21	2	1	Cramp.
	2	18	2 3	2	Crossed by dry-stone dyke, cramp in both cists.
	3	16	2	...	Clay urn packed round by stones, cramp.
	4	...	...	1	Mound spread out, cramp.
	5	...	...	1	Opened previously—mound spread out, clay urn.
Whoom . .	6	15	...	1	Built cist.
	7	23	4	1	Built cist.
	8	18	2	1	Steatite urn, amulets and cramp.
Sandy Holes .	9	...	...	3	Mound spread out, cramp in two cists.
	10	...	...	1	Mound spread out, cramp.
Scabra Head .	11	18	...	1	Surrounded by kerb, mound removed.
Tafts . .	12	21	2	1	Three individuals, cramp.

Cremated human remains were found in every mound, and cramp, a vitreous material formed during the process of cremation in ten of the graves. In many cases the cramp adhered to the burnt bones, and in many others, pieces of bone were embedded in it.

Knap Knowes Group.—This group consists of five mounds set almost in a straight line running from slightly east of north to slightly west of south, the distance between the extreme members being about 260 yards (fig. 1 and Pl. IV.).

No.1 , the most southern of the group, measured 21 feet in diameter and 2 feet in height. In the centre was a cist carefully made of four thin slabs, with another for a cover and one for the bottom. It formed an almost perfect rectangle, with the side slabs projecting beyond those at the ends. The cist measured 15 inches in length, $8\frac{3}{4}$ inches in breadth, and 17 inches in depth. The cover, quadrangular in form and measuring 21 inches by 18 inches by 1 inch, was fractured, and lay 15 inches below the surface of the top of the mound. In the cist were three and a half handfuls of burnt bones, many small pieces of cramp up to $1\frac{1}{2}$ inch in length, and six small unworked pieces of flint.

No. 2, which lay 8 yards distant,[1] measured 18 feet in diameter and 2 feet 3 inches in height. In the centre, right under the dyke, was a well-made cist measuring 12 inches by 12 inches by 15 inches deep. It was almost a perfect square, and, again, the two side slabs projected beyond those at the ends. There were two superimposed cover-stones, the top one being the thicker; there was another slab for the bottom. Two double handfuls of incinerated bones with cramp were found in this grave. About 5 feet to the north-north-east, on the slope of the mound, was another cist which had been opened previously, as the cover-stone had been removed and only the four slabs on the sides and ends remained, the bottom being of the natural clay. The slab forming the south-east end was inserted between those on the sides, but the one at the opposite end projected beyond them. The cist was rhomboidal, being widest at the south-west end, and measured 1 foot $10\frac{3}{4}$ inches in length, 10 inches in breadth at the north, 16 inches at the south, and 14 inches in depth. The sides measured 20 inches in height and the ends 14 inches, so that, as we shall see later, the cover-stone had been carefully fitted to rest on the ends with the side slabs projecting above it. Only two tablespoonfuls of incinerated bones and one small piece of cramp were found in the cist. Two hammer-stones were also recovered, but as the cist wanted the cover it could not be said definitely whether they formed part of the original deposit.

[1] Distances are measured from centre to centre of the mounds.

Evidently most of the remains had been taken out when the cist was first opened.

No. 3 lay 62 yards farther on. It measured 16 feet in diameter and 2 feet in height. Near the centre were the remains of an urn of clay with small flat stones carefully built around it, placed upright upon a flag measuring 2 feet 6 inches by 1 foot. The base of the vessel, which stood tilted slightly to the west, was 2 feet below the surface of the mound. The upper part was amissing, and the part of the body remaining was full of cracks. Four double handfuls of cremated bones, many with cramp adhering, were found in the vessel. The urn, which was made of very dark, friable ware, had to be removed piecemeal, but though several fairly large fragments were got out, their edges were so crumbly that they could not be fitted together. When complete the vessel must have been a large one, of flower-pot shape, with a wide base. As it lay in its cavity it measured internally $8\frac{1}{2}$ inches across the base, and 11 inches in height on the best preserved side. At this height an internal diameter of nearly 15 inches was indicated. The wall measured $1\frac{1}{8}$ inch in thickness and the base $1\frac{5}{8}$ inch. There was no ornamentation on the surviving part of the vessel.

No. 4.—The first three mounds stood quite close to each other, but No. 4 was 153 yards away from No. 3. It was much spread, but maintained a height of 2 feet above the bottom of a cist found at the centre. This cist was a most interesting and carefully built structure, formed of four slabs and a cover-stone, the floor being the natural sub-soil. At the bottom it measured $9\frac{3}{4}$ inches in length and 9 inches in breadth, but at the top, owing to one end and one side slab sloping slightly inwards, the length at the mouth was only $7\frac{1}{2}$ inches and the breadth $7\frac{3}{4}$ inches. Its depth was $15\frac{1}{2}$ inches. The side slabs projected beyond the end ones, which were 4 inches taller, and the cover was neatly fitted so as to rest on the former. One double handful of burnt bones and some fragments of cramp were recovered from this cist.

No. 5.—This mound, which lies 30 yards from the last, had been interfered with many years ago and was considerably scattered. Two slabs which probably indicated the presence of a central cist, a few pieces of incinerated human bones, a flint scraper, and a number of fragments of an urn of very friable, reddish-brown ware were recovered.

Whoom Group.—This group consists of three mounds lying generally north-north-west and south-south-east, within a distance of 170 yards. The central mound lies a little to the north-east of the line connecting the other two (fig. 1, and Pl. IV.).

No. 6, the most northerly of the group, measured 15 feet in diameter,

and, as it had been disturbed in the centre, it showed little height. The remains of a cist, which had a slab 18 inches high at the south-west end, and the sides and other end formed of built stone, were exposed. The cover had been removed and the south-east side, which was best preserved, was reduced to 9 inches in height; only one stone remained on the opposite side and at the north-east end. The bottom was of soil. The cist measured 1 foot 10 inches in length and 1 foot 6 inches in breadth, and the floor was 1 foot 9 inches below the present surface. Any relics, human or otherwise, had been completely removed.

No. 7.—This mound, which was very prominent, measuring 23 feet in diameter and 4 feet in height, lay 17 yards from the last. It also had been dug into at the centre and its contents cleared out. Here the remains of a built cist were revealed, but the cover was gone and it was much reduced in height; the north-west end was entirely destroyed. The cist had been at least 3 feet 7½ inches in length, and was 2 feet 6½ inches in breadth. The best preserved part showed a height of 18 inches. A flagstone formed the bottom, and it lay 4 feet from the top of the mound. No bones were found, but part of a rude stone club-like implement of the Orkney and Shetland type was found in the cist; but again, owing to the grave having been interfered with, it might have fallen in after the disturbance. This, however, does not necessarily follow, as such objects have been recorded from other Orkney cists.

No. 8, the most northerly one of this group, which was separated from the last by a distance of 43 yards, proved the most interesting in the matter of the relics it contained. Unlike the others, which were practically all rectangular, the cist in the centre formed a parallelogram, the ends being inserted at a slight angle to the sides, which overlapped them at both ends. It was formed of four slabs, with a stone cover resting on the sides and the end stones projecting 5 inches above them. The floor was of the natural clay. A heap of thirty stones, the size of one's fist, were piled to a height of about 9 inches on the cover-stone. The cist measured 15 inches in length, 13½ inches in breadth, and 12 inches in depth, the bottom being of clay.

An urn of steatite (fig. 2) containing about five double handfuls of cremated remains and a dozen pieces of cramp was found in the cist, as also were three small cut objects of steatite (fig. 3).

The urn was rather small in size and was about two-thirds full of the burial deposit. As the vessel was very badly cracked and part of one side and of the base had disintegrated, it fell to pieces on handling, but on reaching the Museum, Mr Edwards had no difficulty in restoring it. The urn has an irregularly oval mouth and it is rather lop-sided,

one wall being nearly vertical and the opposite one leaning outwards in a convex curve.[1] It measured from $6\frac{1}{2}$ inches to 7 inches in height, from 7 inches to $7\frac{7}{8}$ inches in cross diameters at the mouth, and from $4\frac{5}{8}$ inches to 5 inches at the base. The lip is flattened and varies from $\frac{7}{16}$ inch to $\frac{1}{4}$ inch in thickness. Just below the brim it is encircled by two shallow grooves having a rounded moulding, about $\frac{1}{4}$ inch wide,

Fig. 2. Steatite Urn from Mound No. 8 at Quandale.

between them. One part of the wall, where broken, showed a thickness of less than $\frac{3}{16}$ inch.

The mouth of the vessel was covered by two small pieces of flagstone, the lower, which was of rude hexagonal form, measuring 9 inches by $7\frac{3}{4}$ inches by $\frac{1}{2}$ inch, and the upper, which was of irregular shape, $8\frac{1}{4}$ inches by 7 inches by $1\frac{13}{16}$ inch.

Three objects of steatite, probably amulets, were found in the bottom of the cist—one under the urn and one about 2 inches inside from the south and east corners (fig. 3). All were of oval discoid form. The first, which was rather thicker on the one side than on the other, measured

[1] The illustration does not show the full extent of the lop-sidedness.

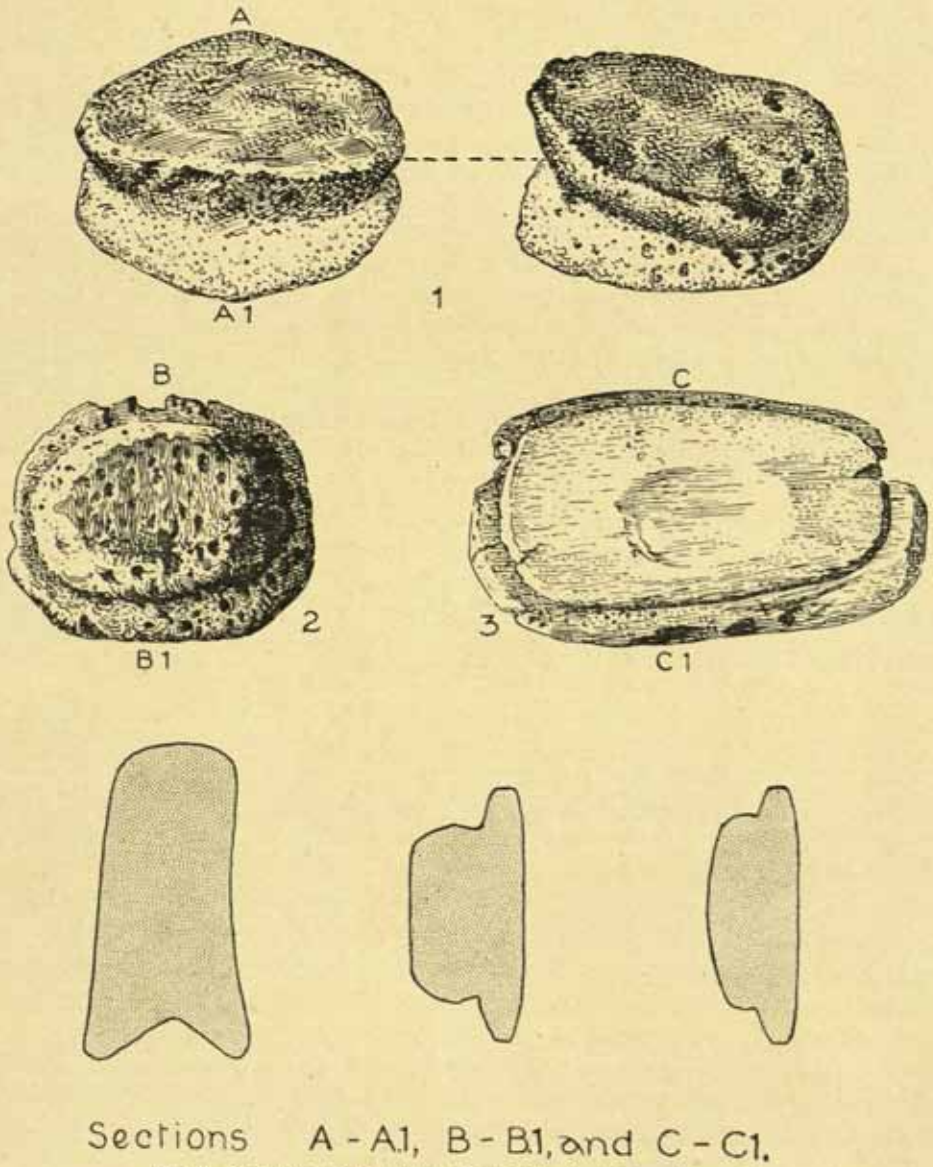


Fig. 3. Steatite Amulets from Mound No. 8 at Quandale. (½.)

$1\frac{3}{4}$ inch by $1\frac{1}{2}$ inch in diameter and $\frac{13}{16}$ inch in greatest thickness, and had a groove cut round one side and both ends. The two others were completely encircled by a groove, with the upper part slightly smaller than the under. They measured $2\frac{3}{8}$ inches and $1\frac{9}{16}$ inch in length, $1\frac{3}{8}$ inch and $1\frac{1}{4}$ inch in breadth, and $\frac{1}{2}$ inch and $\frac{5}{8}$ inch in thickness.

Sandy Holes.—Mounds Nos. 9 and 10 had been greatly disturbed, the soil being scattered and the cists they contained exposed (fig. 1, and Pl. IV.).

No. 9.—In the centre of the mound, which was still about 2 feet high, was a fine large cist, almost square, formed of four long flags. Only at one corner, that to the south, did one stone project beyond the others. The cist measured 3 feet 6 inches in greatest length, 3 feet 3 inches in greatest breadth, and 1 foot 8 inches in depth. The cover was gone, and the bottom was the natural soil. A smaller cist, practically $15\frac{1}{2}$ inches square and the same in depth, had been inserted against the north-east side of the larger one, 5 inches from its east corner. The slab of the larger cist formed one side of the insertion, and three other flags completed its other sides. Two double handfuls of incinerated bones and a few pieces of cramp were all that remained of the original deposits; there were also a few pieces of charcoal and some ash. Some bones were found under the intruded cist.

About 2 feet 3 inches to the north-west was the eastern side slab of another cist which measured 2 feet 3 inches in length, and a small part of its built south end, which had been at least 1 foot 8 inches in length. Two double handfuls of burnt bone with some cramp were obtained here.

No. 10.—At the centre of this mound, which stood 7 yards from No. 9, was a nice cist formed of four slabs, one end of each projecting beyond the adjacent stone so as to suggest a swastika design. It measured 1 foot 6 inches in length, 1 foot 2 inches in breadth, and 10 inches in depth. The side slabs were higher than those at the ends and a cover-stone was fitted in nicely to rest on the latter. This is well brought out in fig. 4. The floor was of beaten clay which had been brought in. In the other cists where the floor was of clay it was just the natural sub-soil.

In the cist were found five double handfuls of incinerated bones and more than a dozen pieces of cramp.

No. 11, which lay above Scabra Head, had been cleared away, leaving exposed a circular kerb formed by a single row of stones [1] set on edge, measuring 18 feet in diameter, and a central cist wanting the cover, but with a slab bottom. The cist was rectangular and had two side and two end slabs, the former projecting beyond the latter at both ends.

[1] It may be recalled that a mound excavated by me at Nears, Rousay, was encircled by a built wall of which three to six courses remained (*Proc. Soc. Ant. Scot.*, vol. lxviii. p. 68).

The cist measured 14½ inches in length and 10½ inches in breadth at the bottom; its depth had been about 11 inches, although the slab at the south-east end was 6 inches higher. More than a double handful of burnt bones and a few pieces of cramp were found in it.

Tafts.—The outlying mound, No. 12, near Tafts (fig. 1, and Pl. IV.), measured 21 feet in diameter and 2 feet in height, and contained a rectangular cist in the centre measuring 2 feet 4 inches in length, 1 foot 7 inches in breadth, and 1 foot 7 inches in depth. The end slabs projected beyond those at the sides, and every one of them had been dressed to a convex top. The bottom was of the natural sub-soil. The cover slab was of irregular

Fig. 4. Cist with and without Cover in Mound No. 10 at Quandale.

shape and overlapped the whole of the mouth of the cist. A considerable quantity of burnt bones representing two adults and a child, with some cramp, were found in the cist.

Every one of the cists which had not been partially destroyed was carefully formed of thin flags of the local Old Red Sandstone, which splits regularly, usually with straight edges. They ranged, generally, from ¾ inch to 1¾ inch in thickness, but in the largest cist they were 2 inches, and one slab in No. 10 was 3 inches. Six of the cists lay north-west and south-east or north-east and south-west, and four nearer north and south or east and west.

The three objects of steatite found in Mound No. 8, which I have suggested may have been amulets, seem to be unique. Small objects of stone have rarely been found in Bronze Age graves in Scotland, but a small rectangular plate of slate with a perforation at two corners was discovered in a cinerary urn at Seggiecrook, Aberdeenshire,[1] and two

[1] *Proc. Soc. Ant. Scot.*, vol. xxxix. p. 186.

small pendants with a single perforation were found in the urn-field adjoining the stone circle at Loanhead of Daviot, Aberdeenshire.[1]

Mound on Ward Hill.

Near the surveyors' cairn on the summit of Ward Hill, which lies about 1200 yards almost due north of Westness House, and rises in steep slopes, faced near the top with rocky bluffs, to a height of over 600 feet, are the remains of a mound which has been considerably reduced in height. It stands within 10 yards of the edge of the cliff to the south-west, and now measures 26 feet in diameter and 1 foot 6 inches in height. About the centre are the remains of a large cist, which seems to have been almost square on plan, with the longer axis lying north-east and south-west (Pl. IV.). The cover has been removed, but the sides and the slab floor remain. Three of the sides are formed with long single slabs set on edge, but two have been utilised to form the fourth—that on the north-east. Generally the flagstones used for the sides and ends of the cists just described had straight upper edges, but in this one the slabs on both sides of the northern corner and on the south side of that on the east were irregular, and the vacancies caused thereby were built up with small pieces of flags so that the mouth of the cist should be brought up to the level. The south end of the slab on the south-west side has been forced out about 1 foot, but the original length of the grave seems to have been 3 feet 3 inches, while the breadth is 3 feet 2 inches; its depth has been 2 feet.

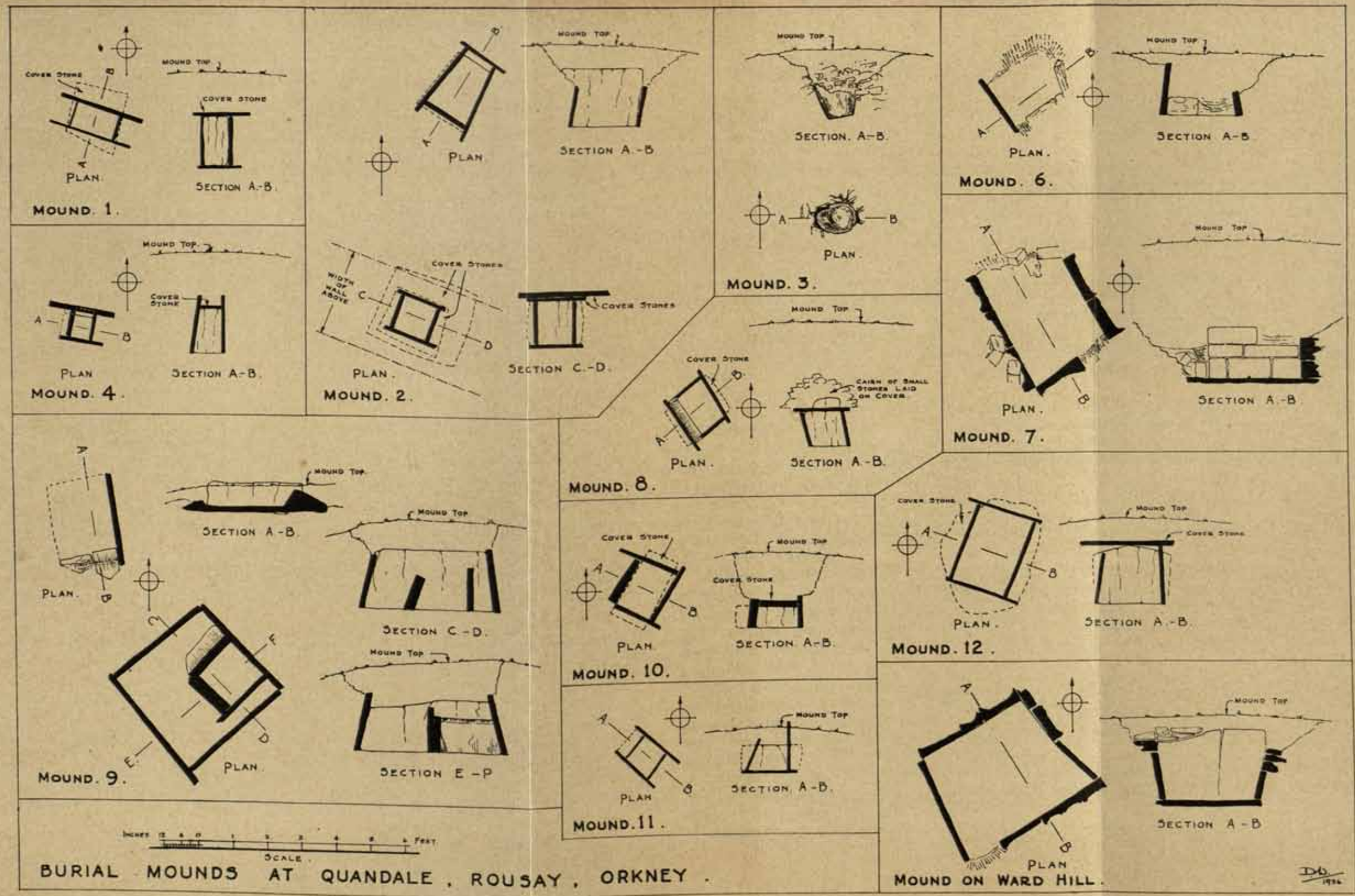
When first opened and the covers removed the cist had been completely cleared out, as no traces of burnt bones, which were probably buried in it, have been left.

INVENTORY OF SKELETAL REMAINS FROM QUANDALE, ROUSAY, ORKNEY, 1936. By Professor Alexander Low, M.D., F.S.A.Scot.

Each parcel contains cremated bones, and in many instances "cramp" is present. The very fragmentary and warped condition of the pieces of bone make identification difficult. No animal bones have been identified, but in every case some part of the human skeleton is present.

Mound No. 1.—Many fragments of cremated bone, amongst which can be recognised pieces of flat bones of human skull. Impossible to say whether more than one individual. Pieces of cramp.

[1] *Proc. Soc. Ant. Scot.*, vol. lxx. p. 300.



BURIAL MOUNDS AT QUANDALE, ROUSAY, ORKNEY.

WALTER G. GRANT.

PLATE IV.

[*To face page* 82.

Mound No. 2.—Many small pieces of cremated bone, parts of human skull identified; probably one individual. Fragments of cramp.

Mound No. 2A.—Fragments of human limb bones; small piece of cramp.

Mound No. 3.—"Found in clay urn." Fragments of human bone identified, but not possible to say whether more than one individual; many fragments of bone with cramp attached.

Mound No. 4.—Fragments of human skull can be recognised; probably remains of one individual; separate pieces of cramp in some instances adhering to the bone.

Mound No. 8.—"Found in steatite urn." The cremated remains consist of many fragments of bone, among which can be identified some twenty pieces of the flat bones of the skull; the right and left petrous bones; fragments of vertebræ; ribs; limb bones including a piece of the head of a humerus and a femur; the remains of one adult skeleton. Quite a number of the fragments are embedded in cramp which is actually fused with the bone.

Mound No. 9.—"Found in big centre cist in Mound No. 9 on Scabra Head." Small quantity of very fragmentary cremated bone; some pieces of parietal, frontal and lower jaw can be identified as human, as well as one or two ribs; probably remains of one adult human skeleton. Some pieces of charcoal and of cramp.

Mound No. 9A.—"Found inside larger cist No. 9." Small quantity of fragmentary cremated bone; some twenty pieces of the flat bones of skull can be identified, and evidence of charcoal. Probably the remains of one adult skeleton.

Mound No. 9B.—"Found in cist 3 feet 3 inches west of big cist in centre of Mound No. 9." Fragments of cremated bone; number of pieces with cramp fused to bone; numerous small pieces of the vault of a rather thin-walled skull, and fragments of limb bones can be identified; probably remains of one adult skeleton; seven pieces of cramp at least.

Mound No. 10.—"Bones found in cist." Large quantity of fragmentary cremated bone; cramp adherent to many pieces of the bone; pieces of the flat bones of skull; 3 molar teeth; pieces of limb bones and fragmentary finger bones—no duplication of parts, so probably one individual.

Mound No. 11.—Small quantity of cremated bone, amongst which can be identified some pieces of human parietal; rib; shoulder blade; ulna. The remains of one human skeleton.

Separately, a small quantity of fragments of cremated bone; pieces

which can be identified are femur and rib. There is also a certain amount of cramp-like material.

Mound No. 12.—Many fragments of cremated bone, among which can be identified pieces of most of the bones of the human skeleton. Duplication of parts of bones make it evident that at least three individuals are represented; for instance, there are two pairs of petrous bones and an odd one. The remains are those of two adults and one child; some pieces of cramp.

III.

A ROUND CAIRN NEAR ACHNAMARA, LOCH SWEEN, ARGYLL.

By Professor V. GORDON CHILDE, D.Litt., F.S.A.Scot.

Just east of the easternmost bay at the head of Loch Sween the land rises in a series of ridges to Cnoc an Altan. The lowest of these ridges rises rather steeply just east of the easternmost of the two burns that flow out near Seafield cottage. At the south-western extremity of this ridge Mr James Robb of H.M.O.W., Edinburgh, came upon two denuded cairns, in one of which a cist was exposed. Suspecting interference with the cist, Mr J. S. Richardson, Inspector of Ancient Monuments for Scotland, suggested that I should excavate the cairn. The Forestry Commissioners very kindly gave me permission to do so, and accordingly a week from 15th to 20th June was spent at the site with two men, Messrs Colin Campbell and Dewar, from Lochgilphead. I have to thank Mr Robb and Mr Richardson, as well as the Forestry Commissioners, for the opportunity of examining and describing this unrecorded monument.

The two cairns stand close together, the spread of stones from the western cairn extending to within a couple of feet of the eastern cairn that stands higher up the ridge. Both had been greatly denuded—doubtless to provide stones for the dyke bounding Seafield meadow at the foot of the ridge—so that they were practically invisible in the high bracken by the time we arrived. Neither cists nor kerb could be detected superficially in the western cairn, and our operations were accordingly confined to its less ruined neighbour. The latter proved to be built on the crest of the ridge of rock that falls away under the cairn at the rate of 1 in 12 towards the west, and more steeply still to the south and north, but the rock was covered with a deep layer of marshy soil.

On the high ground to the north-east the cairn was bounded by a distinct kerb traceable for a distance of 20 feet (fig. 1). The kerb was formed of large angular blocks of local rock laid on edge upon the marshy subsoil: $2\frac{1}{2}$ feet by $1\frac{1}{2}$ feet by $1\frac{1}{4}$ feet represents the average size of the

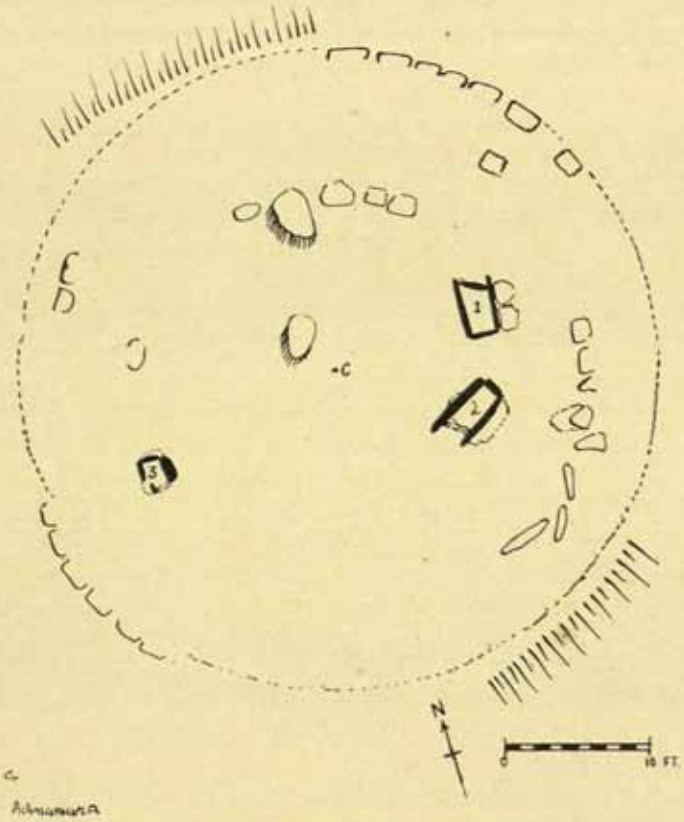


Fig. 1. Plan of Cairn near Achnamara, Argyll.

kerb-stones. As deduced from this segment the diameter of the cairn should have been 45 feet, and the "centre of the cairn" was fixed on the basis of this calculation. On the slopes to the south and north-west the kerb was ill-defined, but on the west, where the ground was more than 3 feet lower than on the east, stones supposed to belong to the kerb were found about 24 feet from the centre. It is, however, difficult to distinguish kerb-stones from spread, since the former are not set deep on the subsoil, but rather laid upon it, and stones of comparable sizes are liable to occur throughout the cairn.

Under the body of the cairn there are traces on the north of an inner setting formed of large boulders or slabs on edge (fig. 2). On the north such stones approached to within 11½ feet of the centre, while on the south-east they were found only 17 to 18 feet from it. The blocks of the inner setting in general ranged in size between 30 inches by 18 inches by 12 inches and 21 inches by 21 inches by 18 inches, while slabs on the south-east measured 36 inches by 27 inches by 7 inches. All these

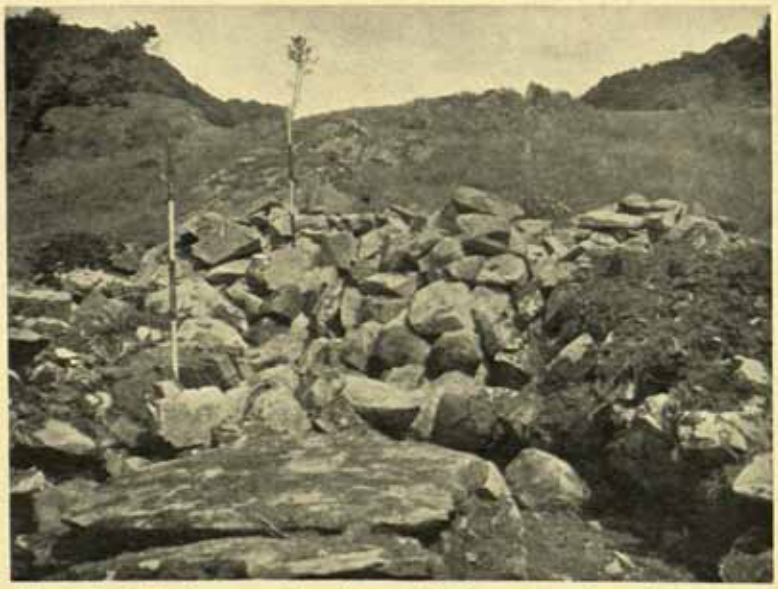


Fig. 2. Cist 2 (in foreground) as discovered: the nearer pole stands in Cist 1.

stones were tilted towards the centre through the weight of stones outside them as none were embedded in the subsoil. But included among them, due north of the "centre," was a huge natural boulder 3 feet square and 20 inches high. Between the setting and the kerb, stones comparable in size to those of the kerb were in the majority, while within the setting such big blocks were less common. All the stones of the cairn seem to be blocks split off the rock ridge on which the cairn stands by weathering or by human action. But even in the best-preserved parts the cairn has been so robbed that only 3 feet of its height survives.

Three cists, all lying eccentrically, were uncovered. The side-stones in all are formed of comparatively thin slabs of a shaley rock which does not outcrop on the ridge and the surface of which peels off readily.

In all cases these slabs had been sadly disintegrated by bracken roots and moisture, so that the original surface had almost entirely vanished —and with it, of course, any grooves or other carvings. Cist 1, lying north and south about 10 feet east of the "centre," was exposed when we arrived (fig. 3). The capstone, 4½ feet long by 3 feet wide, had been partly broken. The cist had been robbed of its original contents and filled instead with bracken roots and very sticky soil. The four slabs

Fig. 3. Cists 1 and 2 looking south.

composing it measure respectively 4 feet 8 inches long by 2 feet 4 inches high, 1 foot 2 inches wide by 11 inches high, 4 feet long by 1 foot 11 inches high and 1 foot 8 inches long (the top being broken off). On the top of the low east headstone was a second that rested upon and projected beyond the two side slabs, so that the total depth of the cist was about 2 feet. The west headstone, set obliquely between the lateral slabs, reduces the cist's length to 3½ feet. The floor of the cist was the subsoil underlying the cairn. The slabs merely rested upon this subsoil and were kept in place by the stones of the cairn round them.

Cist 2 lies 9 feet south-east of the centre with its main axis 67° east of north (magnetic). One capstone, 4 feet 4 inches wide by 3 feet

long, was found still in position covered by stones. A second capstone, 4 feet long by 3 feet 6 inches wide, had, however, been removed and left lying on the cairn's surface. Presumably at the same time the south-western headstone had been pulled up. Through the aperture

Fig. 4. Cist 3 sealed down.

thus created plunderers had robbed the cist of any relics it may have contained, and bracken roots and loose earth had entered the cavity. The three surviving slabs measure respectively 5 feet by 1 foot 8 inches by 6 inches, 1 foot 6 inches by 1 foot 3 inches, and 4 feet 3 inches by 2 feet 3 inches by 4½ inches. The cist had been hollowed out to a depth of over a foot in the subsoil in which the lateral slabs were firmly embedded. A groove in the subsoil suggests that in this cist too the missing headstone had been set obliquely between the side slabs, reducing the cist's length to little over 3 feet.

Fourteen feet west of the centre a third cist, lying north and south,

was found intact. Its capstone, 2 feet 3 inches long by 2 feet wide, was sealed down with flat slabs laid horizontally above it (fig. 4). The cist beneath was only 2 feet long by 1 foot 4 inches wide by 1 foot 4 inches deep and was not excavated in the subsoil. The eastern side is formed of a thick slab, 2 feet long by 8½ inches high by 8 inches thick, the western side of two thin slabs. The southern headstone had collapsed and was lying prostrate on the floor of the cist. Bracken roots had penetrated beneath the capstone and even under the prostrate headstone. No bones survived, and the bracken roots had destroyed any hope of tracing the "ghost" of the corpse on the cist's floor. However, a flat oval pebble, centrally perforated to serve as a pendant (fig. 5), was found in the middle of the floor on the smooth earth immediately under the fallen headstone.

Fig. 5. Perforated Pebble from Cist 3. (¼.)

This, the only relic recovered, does not in itself suffice to date the monument. Since not a trace of bone was found in any of the cists, it may be assumed that all three burials had been by inhumation. Fragments of cremated bones would certainly have survived, whereas unburnt bones would be entirely consumed in the acid soil. But none of the cists was large enough to accommodate an extended body. Hence contracted burial may be inferred. This rite points rather vaguely to the earlier part of the Bronze Age as the date of the monument.

IV.

TWO UNPUBLISHED GROATS OF JAMES I.

By C. H. DAKERS, M.C., F.S.A.Scot.

Edward Burns in describing his "first variety" of the fleur-de-lis groats of James I. says: "Except in the ornamented style of the I, ✠ and L the lettering of the fleur-de-lis groats with this style of ɑ and D is identical with that on the demies of the first variety." [1] Of the demies in question (figs. 424 and 424 A) he writes: "The letters ɑ and D on these pieces have the stems slightly curved as on the Edinburgh pennies Nos. 3 *b*, 3 *c*, 3 *d*, figs. 423 E, 423 F, 423 G, with which they correspond also in the plain I and L." [2] These pennies in turn, as approximating closely to the last coinage with the name of Robert, he shows to be the earliest coinage of James I. in his own name.[3]

In this connection it seems worth recording two interesting groats, which came to light when the Cochran-Patrick Collection was dispersed in March 1936. They were in lot 206, and were described as having a pierced quatrefoil at the foot of the sceptre handle. Burns does not appear to have seen them.

The full description is as follows:—

A. Facing bust in a tressure of seven arcs fleured on four points, including that on the breast. A saltire on each shoulder and a pierced quatrefoil at the base of the sceptre on the left.

O ✠ × IACOBVS ✠ DEI ✠ TRACIA ✠ REX ✠ SCOTORV × ×

R × ✠ DnS ✠ P × | [TECOTO]R ✠ × | MS [? ?] ✠ | ATORMS × ×

VILL × × | A ✠ × ED × × | InBV | RGh ✠ (34 grains)

The lis are in the first and third quarters and the pellets are conjoined into trefoils. On both sides the plain I is used and the plain L appears in VILLA. The "*et*" sign is unfortunately invisible.

[1] *The Coinage of Scotland*, vol. ii. p. 5.
[2] *Ibid.*, p. 34.
[3] *Ibid.*, p. 47.

B. From the same obverse die as A.

R ✠ DnS✠P | TEDOTOR | ×MSłLI× | BΛTORM✠
VILL× | Λ✠ED | InBV×× | RGh✠ (35 grains)

The pellets in the second and fourth quarters are free on this coin, and on the reverse the plain L is used with the ornamental I and ł, as on Burns No. 1, fig. 425.

Neither of these coins appears to be in the National Museum of Antiquities, or in the British Museum.

I think that there can be no doubt that if Burns had seen these coins he would have classed them as the very earliest type of the groat with the name of James, as they correspond in lettering with the early pennies, and the ✠× stops which are used on the reverse of A. are not found on any of the later groats but are found on the earliest demy, fig. 424.

V.

AN UNPUBLISHED SCOTTISH GOLD COIN.

By E. RICHMOND PATON, F.S.A.Scot.

It is an unusual event nowadays to be able to bring to notice an unpublished Scottish coin. The coin in question is an écu or abbey crown of James V. which came into my cabinet from a London sale this year. It was identified in the Sale Catalogue with Burns, Fig. 742, No. 4 *a*, but the reproduction of the obverse given in the plate made it immediately clear that it was unlike any of the écus already noticed by numismatists; it was unknown to Burns. The crown was small; the points between the legend were neater than those on any published of this reign; similarity to the first issued gold of the reign of Mary was at once noticeable.

Fig. 1. Écu or Abbey Crown of James V.

It will be seen from the illustration (fig. 1) that the coin is exactly like the écu of Mary in design and finish. The high-arched small crown is the same; the points between the legend are the same size, though double instead of single; and there is the same small mint-mark of a six-pointed star.

It is now known that James Achesoun was Master of the Mint from 1525 to 1546, and was, therefore, responsible for the écus of both father and daughter. As this unpublished abbey crown of James V. is neater and in every way better finished than the earlier types of the same reign, it seems that, chronologically, it should be placed after the écus with the PER LIGNUM CRUCIS legend. These latter were crudely executed, and their great rarity—only six or seven are known to the writer—suggests that they were in all probability not a success, the legend being too crowded. It is quite possible that Achesoun coined this particular écu as a pattern late in the lifetime of James V. and used it with slight alteration as his model for the first gold issued in Mary's reign.

MONDAY, 11*th January* 1937.

SIR GEORGE MACDONALD, K.C.B., President, in the Chair.

A Ballot having been taken, the following were elected Fellows:—

Colonel CHICHESTER DE WINDT CROOKSHANK, D.L., J.P., F.S.A., Johnstounburn, Humbie, East Lothian.

STEWART H. CRUDEN, 93 Baronscourt Terrace, Edinburgh, 8.

STUART M. K. HENDERSON, B.Sc., Ph.D., Curator of Archæology and History Department, Kelvingrove Museum, Glasgow, C.3.

J. M. MURRAY, Assistant Commissioner, Forestry Commission, 76 Hillview Terrace, Corstorphine, Edinburgh, 12.

JAMES ANDERSON RUSSELL, M.A., Ph.D., "Alderwood," Bearsden, Dunbartonshire.

ROBERT THOMSON, Ph.D., B.Sc., Assistant Lecturer, Edinburgh University, Crossford, by Dunfermline.

NINIAN WALKER, Solicitor, Commercial Bank Buildings, Dunfermline.

ERNEST MACLAGAN WEDDERBURN, Deputy Keeper of the Signet, 6 Succoth Gardens, Edinburgh, 12.

There were exhibited a Bronze Figurine of a Horse, the off foreleg broken (fig. 1), measuring $2\frac{9}{32}$ inches in height and $2\frac{9}{16}$ inches in

Fig. 1. Bronze Figurine of a Horse from Shetland. (½.)

length, found at Crosskirk, Eshaness, Northmavine, Shetland; another Figurine, Mercury (fig. 2), measuring $1\frac{31}{32}$ inch in height, belonging to

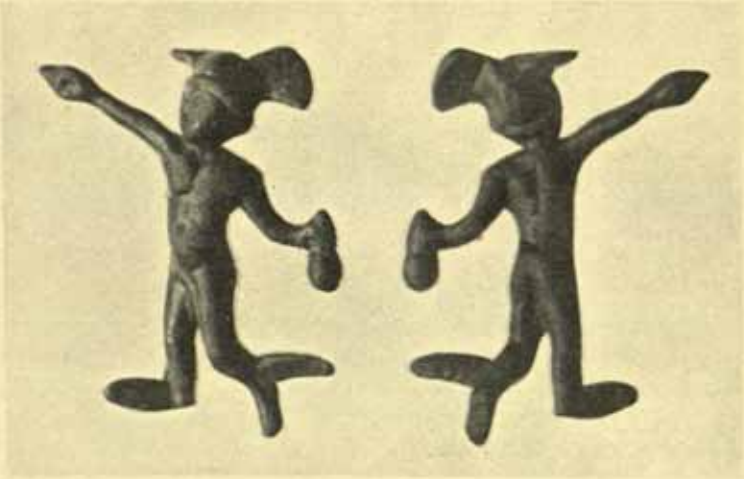


Fig. 2. Bronze Figurine of Mercury found in Perth. (½.)

Fig. 3. Bronze Figurine of Eros found in Edinburgh. (½.)

the Perth Museum and Gallery, found in made-up ground 18 inches under the surface in a garden at Orchardbank, Barnhill, Perth; and a photograph of a third Figurine, Eros (fig. 3), measuring 3 inches in height, found 2 feet below the surface, on undisturbed gravel, in the garden at 12 Craiglockhart Crescent, Edinburgh.

The following Donations to the Museum were intimated, and thanks voted to the Donors:—

(1) By WALTER G. GRANT, F.S.A.Scot.

Objects found in the excavations of Burial Mounds at Quandale, Rousay, Orkney, in the stalled cairn at Blackhammer, Rousay, and in the horned cairn, the Knowe of Lairo, Rousay. (See previous communication by Walter G. Grant and subsequent communications by Dr Graham Callander and Walter G. Grant.)

Indeterminate discoidal object of Stone, measuring $1\frac{7}{8}$ inch by $1\frac{5}{8}$ inch by $\frac{9}{16}$ inch, with a perforation in the centre and another near the edge, ornamented by radial lines on both faces, found on the top of Midhowe stalled cairn, Rousay.

(2) By Dr J. J. GALBRAITH, F.S.A.Scot.

Pitch-pipe of Mahogany, consisting of a long stopped diapason pipe, fitted with a movable graduated stopper or piston, that has a strip of lead, on which the chromatic scale covering one and one-half octaves is engraved, let into the top; the length of the pipe is $11\frac{1}{8}$ inches. It was used in a Parish Kirk in Caithness.

Beaker of Brown Ware, slightly restored, measuring $7\frac{1}{8}$ inches in height, 6 inches in diameter across the mouth, $5\frac{1}{2}$ inches at the neck, 6 inches at the bulge, and $3\frac{3}{8}$ inches across the base, decorated by a broad band of ornamentation under the lip and a narrower one above the widest part, all incised. The upper band consists of oblique lines running down from right to left, below which is a band of vertical lines with a zig-zag of three parts under it, bordered below by a single marginal line. The lower band shows five transverse lines with a lattice pattern below, and part of Base of another Beaker, found beside the above cist. Found in a short cist at Findon, Urquhart, Ross-shire. (See subsequent communication by Dr Galbraith.)

(3) By GEORGE ROMANES, Moat Farm.

Axe of Felstone, small and finely made, measuring $2\frac{5}{8}$ inches by $1\frac{13}{16}$ inch by $\frac{5}{8}$ inch, found on Moat Farm, Rosslyn, Midlothian.

The following Donations to the Library were intimated, and thanks voted to the Donors:—

(1) By H.M. GOVERNMENT.

Calendar of State Papers. Scotland and Mary Queen of Scots. Vol. x., A.D. 1589–1593. Edinburgh, 1936.

(2) By ROBERT C. NESBITT, F.S.A.Scot., the Author.

Montrose. The Cotswold Lecture Society. Second Impression.

(3) By HENRY J. CRAWFORD, B.A., F.S.A.Scot., the Author.

Stirling Castle in Art. A Catalogue of Paintings, Drawings, Etchings, Old Maps, and Plans of Stirling Castle, with Notes. Stirling, 1935.

(4) By A. D. LACAILLE, F.S.A.Scot., the Author.

The Palæolithic Sequence at Iver, Bucks. Reprinted from *The Antiquaries Journal*, October 1936.

(5) By THE DIRECTOR, Russell-Cotes Art Gallery Museum.

Bulletin. Vol. xv., No. 4.

(6) By WALTER G. GRANT, F.S.A.Scot.

Orkney for Holidays. The Official Publication of Kirkwall Chamber of Commerce. Glasgow, n.d.

(7) By THE SOCIETY OF FRIENDS OF DUNBLANE CATHEDRAL.

The Society of Friends of Dunblane Cathedral. Vol. ii., part 3, 1936.

(8) By HERBERT MARYON, the Author.

Soldering and Welding in the Bronze and Early Iron Ages. Reprinted from *Technical Studies*, vol. v., No. 2, October 1936.

(9) By WILLIAM LYLE, F.S.A.Scot., the Author.

"De Insula" or The Lyles of Renfrewshire. Printed for private circulation. Glasgow, 1936.

(10) By MARY A. JOHNSTONE, B.Sc., R.L.S., the Author.

The Etruscan Collection in the Free Public Museums of Liverpool. From *Annals of Archæology and Anthropology*, vol. xix.

(11) By THE COUNCIL OF THE EAST LOTHIAN ANTIQUARIAN AND FIELD NATURALISTS' SOCIETY.

Bibliography of East Lothian. Compiled by James H. Jamieson, F.S.A.Scot., assisted by Eleanor Hawkins. Edinburgh, 1936.

(12) By G. T. CLINDENING, Adelaide, the Author.

The House of Glendonwyn. Part 8—Clindening; and part 9—Drumrash.

(13) By F. G. SIMPSON, M.A., Hon. F.S.A.Scot., IAN A. RICHMOND, M.A., F.S.A.Scot., Miss K. S. HODGSON, and KENNETH ST JOSEPH, B.A., the Authors.

Report of the Cumberland Excavation Committee for 1935. Reprinted from *Transactions*, vol. xxxvi., New Series.

The following Communications were read:—

I.

RAIT CASTLE AND BAREVAN CHURCH, NAIRNSHIRE.

By W. DOUGLAS SIMPSON, M.A., D.Litt., F.S.A.Scot.

Rait Castle occupies an exceedingly fine situation on rising ground at a height of 250 feet above sea-level, overlooking to the northward the valley of the Nairn and the rich champaign country that skirts the Moray Firth. It thus commands a magnificent panorama, of which the centre point is formed by the many-spired town of Nairn, with the blue waters of the Firth extending behind it on either hand, and beyond them the bluff red cliffs of the Black Isle and Nigg, sundered by the dark cleft of the entry to Cromarty Firth. Behind these again, in a higher lift, is a long grey line of distant hills, stretching from the swart couchant mass of Ben Wyvis on the left to the far-distant, high-upstanding cone of Morven of Caithness on the right. But from the standpoint of defence the position of the castle is a wretchedly poor one. Immediately to the south of it the ground rises abruptly into a large rough irregular knoll with bossy outcrops of glaciated porphyritic granite—a beautiful pink stone with twinned felspar phenocrysts. This rock exhibits distinct striation, the direction of the ice-flow having been to the east and south-east.[1] The slopes skirting the knoll are thickly strewn with erratic boulders, and the whole area is at present covered with a dense undergrowth of thorn, whin, and broom, all rising into a sombre background of pine and larch. The main building—or "palace," to give it its technical term—is placed on the northern margin of the site, while the barmkin or courtyard enclosure, upon which the palace fronts, extends southward to the foot of the rock.

The palace (see plans, fig. 1) consists of an oblong hall, raised upon unvaulted cellarage and having a garret overhead: to its south-west[2] corner is appended a round tower of three-quarter salient, with storeys corresponding to the main building; and from the west or dais end of the hall projects northward a narrow oblong garderobe tower, now greatly ruined. The dimensions of the main building, on the ground level, are 54 feet 3 inches by 21 feet 7 inches, within walls 5 feet 8 inches thick, and the round tower, with walls a foot less in thickness, has an

[1] This eastward drift of the ice has carried erratics of the Rait porphyry as far afield as Banffshire.

[2] For convenience in description it is assumed that the palace lies east and west. The actual orientation is shown on the plans.

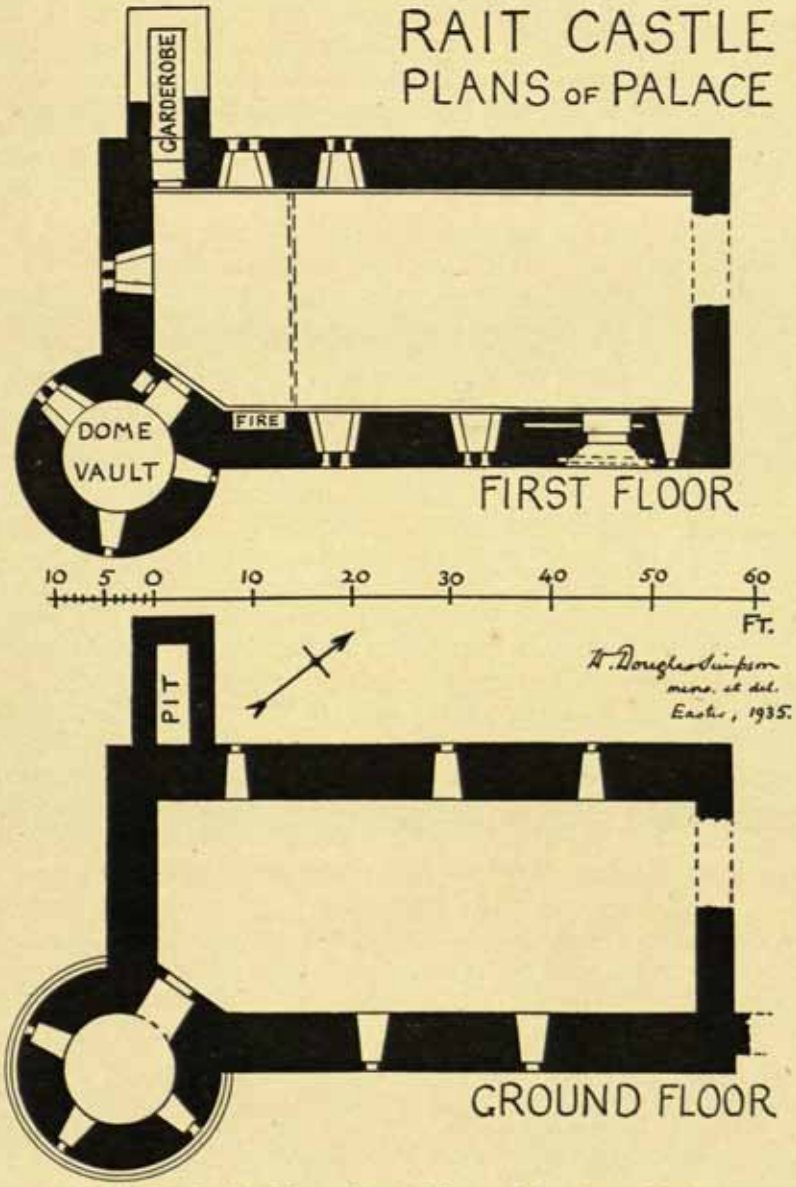
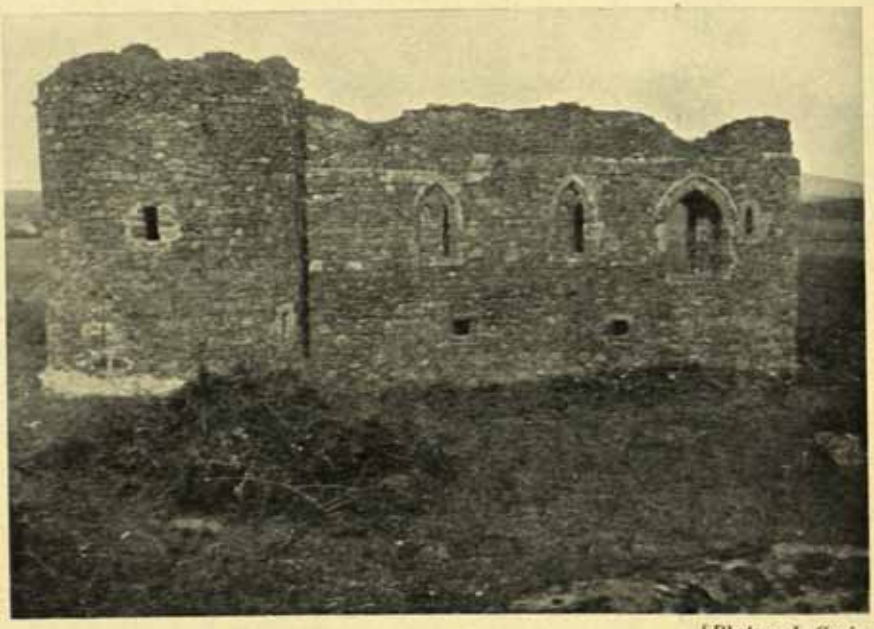


Fig. 1. Rait Castle: Plans of ground floor and first floor of Palace.

internal diameter of 11 feet 6 inches. The garderobe tower was 8 feet 2 inches broad with a projection of 12 feet 8 inches, its walls being 2 feet 8 inches thick. At present the walls of the palace exist to an average height of about 36 feet on the north side and 25 feet on the south side, and the tower survives to a greatest height of 27 feet.

As already stated, the palace faces south upon the courtyard. In the basement on this front (fig. 2) are two small oblong windows with



[*Photo : J. Craig.*

Fig. 2. Rait Castle: View of Palace from south.

a heavy external chamfer. On the first floor close to the east end, at a height of 8 feet 8 inches above ground, is the entrance (fig. 3), a conspicuous and handsome feature of the castle. It consists of an outer and an inner arch, both of a drop-centred pointed form. The outer arch has a broad chamfer beneath a heavy hood moulding with chamfered upper and hollowed under faces, the whole resting on plain stops. Within this is a portcullis chase, and behind this again is the inner portal, which has a heavy double chamfer and was furnished with a wooden door, secured by a bar, withdrawn into a long slot on the western side. The daylight measurements of the inner or true portal are: breadth, 4 feet; height, 7 feet 3 inches. Immediately to the east of the portal is a pointed and chamfered observation loop for the porter.

West of the doorway and set midway in the front are two large windows lighting the body of the hall (fig. 2). They have a plain chamfer without hood mould, and are of pointed arched form, divided into two lancets by a chamfered mullion branching at the impost level, so as to form a lozenge-shaped void in the head. In each case the mullion has gone, but the tracery survives, owing to the fact that the entire head of the inner order of the window, above the impost level, is cut out of a single stone, in the manner of plate tracery. The over-all daylight dimensions of these windows are: breadth, 2 feet 8 inches; height, 6 feet 1½ inch.

[*Photo : J. Craig.*

Fig. 3. Rait Castle: Entrance.

The east end wall of the palace is breached throughout its height. It has been crowned with a parapet oversailing on a single continuous corbel table at a height of about 24 feet above ground. Near the south end are the tusks of a barmkin wall which engaged at this point: it was 3 feet 7 inches thick and about 8 feet in height.

On the north side at the basement level are a pointed loop at either end and a plain oblong window in the middle, similar to those on the opposite front. All have the usual heavy chamfer. The loops are at a higher level than the window. On the first floor level the only openings are two large windows (fig. 4), placed close together near the west end. These have been similar in pattern to those on the south side, but have lost both mullions and tracery.

The west wall has no basement openings. On the first floor is a large window of the usual pattern (fig. 4), but now robbed of its mullion and tracery.

The basement of the tower is lit by three loopholes, of which the south-east one is still preserved, and is a narrow unarched opening with the usual heavy chamfer. The other loopholes have had their dressings torn out and are roughly restored. On the first floor are two loopholes and also a very handsome window looking north-west (figs. 4, 5). This is of the standard pattern with branched mullion forming two lancets and a lozenge in the head, but the tracery is built in separate

pieces, and is enclosed in a chamfered oblong frame, of which the lintel has been crudely renewed.

The masonry of the palace is rough but good, closely packed, whinstone and granite rubble brought to course, and showing a fairly free use of pinnings. On the south front in the lower part of the wall is a considerable admixture of red and yellow freestone. This material is used

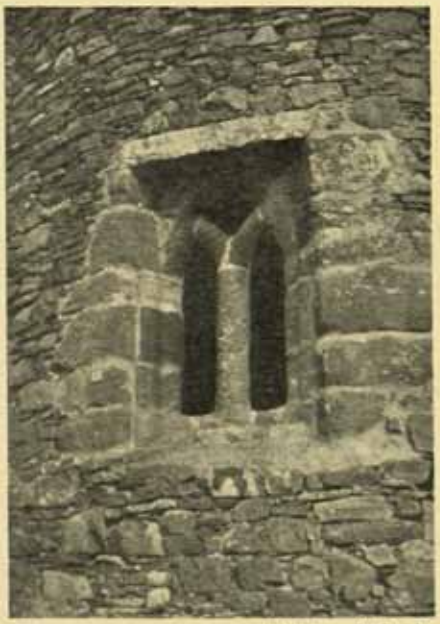
[*Photo : J. Craig.*

Fig. 4. Rait Castle: View of north and west fronts of Palace.

throughout for the dressings. The prevailing chamfer on the large windows is of 3 inches, but in the narrow loops it is of 4 or 5 inches, and at the portal it is increased to 6 inches. All the larger windows are bored for iron grilles. The tower has a low battered base of two splayed freestone courses with a vertical course between and a vertical plinth in rubble work below.

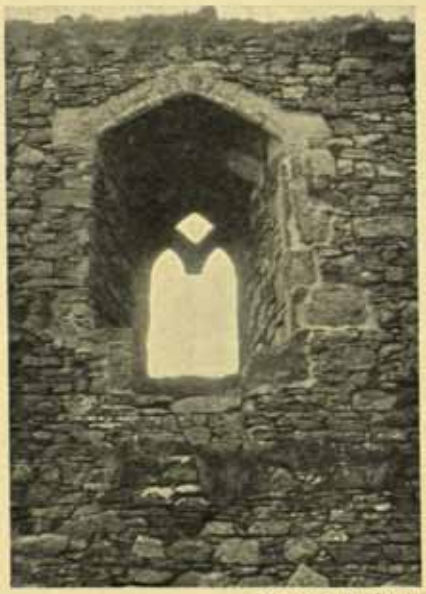
Passing now to describe the interior of the palace, we find in the basement no features of interest save the loopholes and windows already noted. These have splayed ingoings with lintels originally of freestone, but now roughly restored with granite or whinstone. They are checked for internal shutters. The scarcement, 6 inches broad, for the hall floor still exists on the side walls at a height of 8 feet 6 inches above

ground level. On this floor the porter's loop has a splayed and lintelled ingoing in whinstone. The portal has a high elliptic chamfered rear-arch, carefully wrought in freestone: no doubt the jambs below were also in freestone, but are replaced by rough modern repairs. The traceried windows are also carried out in freestone throughout (fig. 6). They have seats in their splayed ingoings, the benches of which project



[*Photo : J. Craig.*

Fig. 5. Rait Castle: Window in Round Tower.



[*Photo : J. Craig.*

Fig. 6. Interior view of east window, south side.

and are chamfered below. These window bays are all most carefully finished off with ashlar scoinsion arches, strengthened by a mid-rib and a rear-rib, moulded with a double hollow chamfer of rather delicate profile. All the windows were strongly barred, and are furnished with checks and bat-holes for internal wooden frames or shutters. At the west end on the south side there has been a fine fireplace, unfortunately now much ruined. It is 5 feet 2 inches wide and 1 foot 9 inches deep, and has had chamfered freestone jambs with a lintel, now gone, resting upon corbels projected in two courses.

The two large windows close together on the north side may both have been intended to light the dais. On the other hand, this would seem to imply a dais too large in proportion to the hall; and it is more

probable that (as suggested on plan) there was a light partition crossing the hall between the two windows, so as to form the normal mediæval accommodation of hall, great chamber, and solar in the tower. In that case the hall will have had a central hearth with a louvre.

The garderobe tower (fig. 4) enters the hall level by a plain freestone door, the lintel of which is gone; the jambs are checked for a door closing against the hall. The garderobe chamber has been roughly arched. The pit below measures 10 feet 2 inches by 3 feet 3 inches, and is 8 feet deep. In excavating it a small midden deposit was found, consisting of animal bones and a little comminuted charcoal.[1]

[*Photo : J. Craig.*

Fig. 7. Rait Castle: Vault in Round Tower.

At the inside wall-head level on the south side of the hall a few of the rough corbels still remain which had carried the timbers of the roof.

The round tower has a diagonal gorge wall in which are the doors of access from the basement and hall. Above the latter the gorge wall is set back so as to allow a bench for the roof timbers. The lower door has been roughly rebuilt: the upper has chamfered freestone jambs and lintel. The basement of the tower has not been vaulted, but the joist-holes have disappeared in the course of modern repairs, and the ingoings of the three loopholes have also been refashioned. The south jamb of the south-west loop shows a freestone quoin, re-inserted, on which is incised

[1] The bones have been submitted for examination to Mr R. M. Neill, M.C., M.A., of the Natural History Department, University of Aberdeen, who reports as follows:—

Rait Castle, Animal Remains.—Two oyster valves, one left metacarpus of a medium-sized ox, and nineteen broken fragments, up to 3 inches in length, of ox and sheep bones.

Details: 1. Sheep (young)—3 fragments skull.
1 fragment vertebra.
1 ,, right scapula.
11 fragments limb bones.
2. Ox (medium size)—1 left metacarpus.
1 fragment left humerus.
1 ,, phalanx of foot.
1 ,, skull.
3. Two oyster valves.

a large sigma-shaped mason's mark, about 4½ inches long. The first floor is ceiled with a most beautifully constructed dome vault (fig. 7) in fourteen perfect rings of yellow freestone ashlar, mostly oblong blocks closely jointed, and centred on a plain octagonal unprojected keystone. The entrance passage on this floor has freestone lintels carried on a curved freestone corbel course, and on the north side is a small aumbry neatly wrought in freestone, with an inner check. The two loopholes on this level have freestone jambs and lintels, all without chamfer. The ingoing of the large traceried north-west window has side benches similar to those of the hall windows: it is covered by lintels resting on a double course of curved continuous corbels, all in freestone.

No stairs are apparent anywhere in the palace, and the connection between the different floors must have been by trap-doors and ladders. It is also curious that there is no fireplace in the round tower. Both these absences indicate a relatively early date.

Owing to their greatly ruined state and the densely overgrown and encumbered condition of the site, it is impossible to give a satisfactory description of the courtyard buildings. Their plan, so far as ascertainable, is indicated on fig. 8. A striking feature is the way in which the enclosing wall on the rearward or south side is involved with a great ledge of ice-worn granite outcrop, forming a smooth, very steep, and perfectly straight slope some 8 feet high, and running about 80 feet in a south-south-westerly direction. These barmkin walls are nowhere more than 9 feet in height, and are of very slight construction, not more than 2 feet 6 inches thick. In materials and texture they are not dissimilar from that of the palace. At the position marked on plan is an area filled with stones, amid which, when the upper few layers are removed, water is found. This may mark the position of a well.

No trace now exists of the entrance. Probably it lay along the west end of the palace and past the round tower, which thus would command the approach. The main door into the palace will, of course, have been reached from the courtyard building connected with it.

Rait Castle is in every way a most noteworthy building. In fact there is nothing quite like it in Scotland. It is an excellent and early example of the "palace" plan, introduced into Scotland in the latter part of the fourteenth century.[1] As the name indicates (*palatium* in mediæval Latin signifies "hall" [2]), this plan consists essentially of a long

[1] See W. Mackay Mackenzie, *The Mediæval Castle in Scotland*, chap. v.

[2] So also in mediæval German records, the regular name for the hall part of a castle is *palas*.

hall, raised upon storage which may or may not be vaulted, and often, as in the present case, having private accommodation adjoining it in an angle tower. The plan is thus radically different from the tower-house plans which were more usually in vogue in Scotland at this period, and are so well exemplified in the neighbouring castles of Cawdor and Kilravock. Particularly remarkable features at Rait are the unusual and elaborate treatment of the well-proportioned windows, more suggestive of ecclesiastical than of domestic architecture; the large and

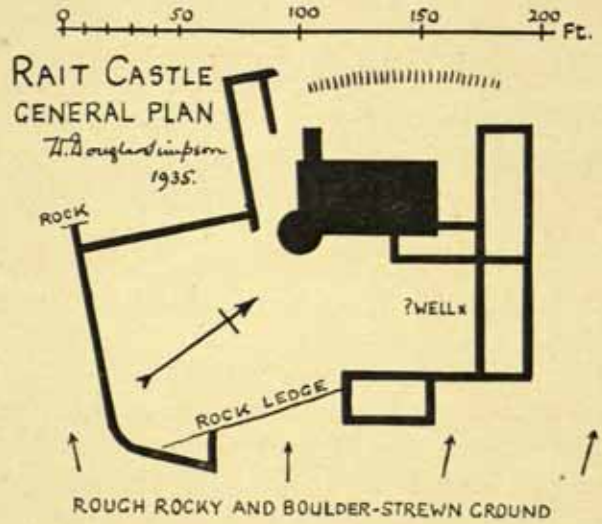


Fig. 8. Rait Castle: Plan showing Courtyard Buildings.

strongly defined doorway, which seems out of scale with the rest of the edifice; and the extremely careful finish of all the freestone dressed work and moulded detail. An attempt to work out the date and affinities of this very important building involves us in some interesting questions.

The fertile soil and sunny climate of the ancient province of Moravia have been celebrated for many centuries. After its incorporation in the expanding dominions of the Canmore dynasty, these natural advantages led to the province being extensively colonised by Anglo-Norman settlers, both lay and ecclesiastical. The Church, in particular, secured large possessions in this favoured region; and both the Cathedral Kirk of Moray at Elgin and the conventual establishments in Elgin and at Urquhart, Pluscarden, and Kinloss, soon drew to themselves great wealth. Wealth in the Middle Ages inevitably expressed itself in terms

of building; and in Moravia conditions were particularly suited for fine building, because the low-lying portion of the province consists of broad and deep beds of Old Red and Triassic sandstone. Thus it happened that the architecture of these ecclesiastical establishments in Moravia reached a degree of perfection and a richness not surpassed anywhere else in Scotland. The existence of these great and ornate buildings of necessity implies the presence in the province of a school of masons trained in the highest conventions of their art: and it is certain that these men must have exercised an important influence also on the lay architecture of the district from the moment that stone castles began to supersede the timbered earthworks which the first early Anglo-Norman settlers threw up.

That this was the case at Rait no one who has studied the building can doubt for a moment. It is obvious that its master mason was a man of high professional standing, and familiar with the fine Gothic building which was going on at the neighbouring ecclesiastical sites. It is, however, certain that Rait Castle is not to be bracketed with the first great efflorescence of mediæval architecture in Moray during the thirteenth century—the period that gave us the noblest work at Elgin, Pluscarden, and Kinloss. The plan of the castle at once forbids any such idea; for, as already stated, these "palatial" buildings do not appear before the middle of the fourteenth century at the earliest. The oldest documented example seems to be Kindrochit in Mar, which can be dated, on fairly certain evidence, to *ante* 1371.[1] Here we have the characteristic long hall on unvaulted cellarage, with private accommodation opening off it in flanking towers. The doorways have the same heavy chamfer which is found at Rait. Such broad chamfers are usual in Scotland throughout the fourteenth century: they may be studied, in a dated example, at David's Tower in Edinburgh Castle, built between 1367 and 1378;[2] and, in a nearer instance from the very beginning of the century, at Lochindorb Castle in Badenoch,[3] where the small oblong windows in the angle towers, with their heavy chamfer, have a close resemblance to those at Rait.

Another early example of the "palatial" plan, upon whose date needless doubt has been cast, is Tulliallan Castle in Fife. Here the cellarage below the hall is beautifully groin-vaulted on central piers. The fourteenth-century character of all this detail has long been recognised, and in view of the fact that the fortalice or "forslete" of Tulliallan is

[1] See my paper in *The Antiquaries Journal*, vol. viii. No. i. (Jan. 1928) pp. 69–75.

[2] See *Proceedings*, vol. xlviii. pp. 230–70; W. T. Oldrieve, *David's Tower at Edinburgh Castle*, 1914.

[3] See my paper in *Magazine of the London Morayshire Club*, new series, vol. iv. (Nov. 1931) pp. 33–42.

on record in 1402 and in 1410[1] there seems no reason to doubt that the building is really of the date which its moulded features indicate. Tulliallan possesses one feature paralleled at Rait, namely, the narrow oblong garderobe tower opening off the dais end of the hall.

The greatest of the early castles in Moravia appears to have been Duffus, which indeed is one of the grandest examples of a mount-and-bailey lay-out extant in Britain. No doubt owing to the presence in the province of fine building stone and skilled masons, its timber defences were at an early date replaced with a stone tower and curtain walls carried out on a big scale and with the high architectural finish usual in Morayland. Here again, as at Rait, the detail indicates a date in the latter half of the fourteenth century:[2] and further, it presents points of such close resemblance with Rait as to make it almost certain that the same master mason was responsible for both buildings. We find at Duffus the same narrow oblong or lancet windows with a heavy chamfer, and in the mural passages of the tower is the identical corbelled lintel construction which we have noted at Rait.

The old church of Barevan, near Cawdor, described in the second part of this paper, exhibits strong architectural affinities with Rait Castle. Its lancet windows have the same broad plain chamfer, and there is also one larger window of two lights with tracery of design exactly similar to those at Rait—except that at Barevan the external mouldings are slightly richer.

I have little doubt that the castles of Duffus and Rait and the church of Barevan were all built by the same masons, and that their date falls somewhere in the latter half of the fourteenth century—probably fairly near its end. These three buildings thus form a group the interest of which is not surpassed in the north of Scotland.

A good deal of rather harsh repair work was carried out on the castle shortly before the War, but it is now in an unsatisfactory state, and it is much to be desired that the wall-heads and the vault in the tower should be cleared of vegetation and made weatherproof.

The Thanedom of Rait was one of the oldest manors in Nairnshire. It is first on record among a list of estates in the bailiewick of Nairn

[1] Sir William Fraser, *The Douglas Book*, vol. iii. pp. 402, 406. There was a still earlier castle of Tulliallan, whose walls Edward I. ordered to be strengthened in 1304 (J. Bain, *Calendar of Documents relating to Scotland*, vol. ii. No. 1514). But this could not have been the present "palatial" building, and was no doubt a structure of timbered earthwork. It will be represented by the remains of an embanked ditch which still encloses the site.

[2] Mackenzie, *op. cit.*, p. 46. Although the work carried out by the Ancient Monuments Department on Duffus Castle was completed so far back as 1928, it is most disappointing that no account has yet been published. The failure of H.M. Office of Works to provide records of the operations undertaken by them is a serious handicap to mediæval studies in Scotland.

in the year 1238.[1] The statement has been made that its original owners were Mackintoshes, and that Shaw, fourth chief of that clan, married Helen, a daughter of the Thane of Cawdor, and before 1265 obtained a grant of Meikle Geddes and Rait.[2] Be this as it may, its earliest lords of whom we have contemporary record took their territorial designation from the manor, and nothing certain is known as to their origin, though they are said to have been Comyns. Sir Gervaise de Rait appears as witness to the charter granted by Elizabeth Bisset, conveying the lands of Kilravock to her son-in-law, Hugh Rose of Geddes: this charter is undated, but seems to belong to the closing years of Alexander III.'s reign.[3] The form of the name therein is *Rath*, which means simply "fortress." Under the provisional government established by Edward I. during the contested succession, Sir Gervaise was constable of the castle of Nairn, and takes from its keeper, Thomas de Braytoft, a receipt for the latter's salary, dated at Rait, Thursday, 8th March 1292.[4] His name is found in the *Ragman Rolls* among a list of Scottish magnates who at Elgin, on Friday, 27th July 1296, gave in their allegiance to the all-conquering Plantagenet; and his letter of submission is still extant.[5] Sir Gervaise de Rait, with his younger brother Sir Andrew, attended as vassals of the English King at the parliament summoned by him at Berwick on 28th August following.[6] Early in June of next year Sir Andrew de Rait was in England, and on the 11th of that month King Edward at Ospringe issued two documents affecting him. The first was a letter patent signifying that the King had committed to his liege Andrew Rait all the lands of Gervaise Rait, his brother in Scotland, presently in the King's land. The second was a safe conduct for him "going on the King's particular business to Scotland," and authorising him to use the public horses.[7]

The great revolt against English domination had now broken out in Morayland, and the lords of Rait remained true to Edward. At the end of July Sir Andrew de Rait was sent back by the Bishop of Aberdeen with a letter to the King detailing the efforts that had been made to stamp out the rising. "He can tell you these affairs in all points," wrote the Bishop, "for he was in person at all these doings." Sir Andrew travelled south along with a cleric, Bernard de Mouat, and carried with

[1] *Registrum Episcopatus Moraviensis*, p. 34.
[2] *Macfarlane's Genealogical Collections*, vol. ii., reff. in Index.
[3] *The Family of Kilravock*, ed. C. Innes, pp. 28–9.
[4] J. Bain, *Calendar of Documents relating to Scotland*, vol. ii. No. 579; *cf.* J. Stevenson, *Documents Illustrative of the History of Scotland*, vol. i. pp. 283–4 (where the date is given as 6th March).
[5] *Ragman Rolls* (Bannatyne Club), pp. 103–5, 158; Bain, *Calendar*, vol. ii. No. 793, also p. 195.
[6] Bain, *Calendar*, vol. ii. p. 210.
[7] *Ibid.*, Nos. 893, 961.

him letters to the English King from the Countess of Ross and the Earls of Mar and Strathearn. Before leaving Scotland they had an audience of the notorious Hugh de Cressingham, Edward's rapacious Treasurer of Scotland, who was afterwards slain at Stirling Bridge, and is said to have had his skin flayed from his corpse and made into saddle girths by the infuriated Scots. Cressingham evidently had his reasons for distrusting Sir Andrew, for on 5th August 1297 he writes from Berwick to his royal master warning him that "Sir Andrew Rait is going to you with a credence which he has shown me, and which is false in many points and obscure, as will be shown hereafter, as I fear; and therefore, Sire, if it be your pleasure, you will give little weight to it." [1]

In 1304 Sir Andrew de Rait was employed in making a survey of the King's lands in Scotland.[2]

At this period the residence of the de Raits, like most contemporary Scottish castles, will have been a construction of timbered earthwork. Whether or not it was on the site of the later stone building we cannot say.

What became of the family of de Rait is not certainly known, but it is said that the last of them, Sir Alexander, had to flee the neighbourhood in 1404 for slaying Andrew, Thane of Cawdor, and that thereafter he founded the family of Rait of Hallgreen in the Mearns.[3] At all events there was a Thane Andrew who was newly dead before 11th July 1405, on which day his son obtained a precept of sasine as Sheriff of Nairn and Constable of its castle.[4] The devolution of the manor of Rait remains obscure until 1442, when it was granted to the Mackintoshes. At Moy Hall there still exists

"a precept, dated 5th October 1442, by Alexander de Seton, Knight, Lord of Gordon, to William, Thane of Cawdor, as his bailie, directing him to give sasine to Malcolm Mackintosh in the lands of Meikle Geddes and half of the lands of Rait with the Castle thereof. The charter on which this precept founds was dated at Inverness on the preceding day. Towards the end of the century a charter of the lands and castle was granted by Alexander de Seton of Tullibody, eldest son of the foresaid Alexander Seton (first Earl of Huntly) to the Thane of Cawdor, to whose family the other half of Rait already belonged, but the Mackintoshes still asserted rights, and a dispute arose between them and the Campbells of Cawdor, successors of the old Thanes, which was not settled till 1521." [5]

[1] Stevenson, *op. cit.*, vol. ii. pp. 209–15, 227; Bain, *Calendar*, vol. ii. Nos. 920, 921, 924, 932.

[2] Bain, *Calendar*, vol. ii. pp. 441, 443. See E. M. Barron, *The Scottish War of Independence*, 2nd ed., pp. 196–9.

[3] Lachlan Shaw, *History of the Province of Moray*, ed. 1775, p. 111.

[4] *Book of the Thanes of Cawdor*, ed. C. Innes, p. 5.

[5] *Scottish Historical Review*, vol. ii. p. 104. In the Cawdor charter chest is a grant of feu-farm by Alexander Seton of Tullibody to the Thane of Cawdor, conveying to him "my lands of Meikle Geddes and my half of the *vill* of Rait," but not mentioning the Castle. It is dated at Elgin 26th October 1493 (*Book of the Thanes of Cawdor*, p. 80).

The half of the lands of Rait that belonged to the Thanes of Cawdor included the mill, as appears from a writ in the Cawdor charter chest, dated 17th August 1442.[1] In 1501, owing to the non-entry of Alexander Seton of Tullibody, the other half of the lands were bought from the Crown by Walter Ogilvie of Boyne. This action was resisted by the Thane of Cawdor, who "in the hall or house of Geddes," on 29th May 1501, solemnly annulled the sasine by the ceremony of breaking a dish and casting it into the fire.[2] Notwithstanding this, the Ogilvies succeeded in retaining possession until finally the lands were bought from them by Sir John Campbell of Cawdor, by a contract dated at Elgin 16th July 1532.[3] Even then the Ogilvies reserved the superiority, and so, when John Campbell of Cawdor succeeded his father as a minor in 1551, his uncle, the Prior of Ardchattan, in his capacity as tutor-in-law to the young laird, obtained a gift of non-entry of these lands from Alexander Ogilvie of Carnousie and Durn, "superior of the landis of Geddes and Rait, with the fortalice liand in the samyn."[4] The "fortalice of Rait" recurs in a service of John Campbell of Cawdor as heir of his father, given at Nairn on 16th November 1596.[5] The Hiltown and Castletown of Rait are on record in 1622.[6] At what date the castle ceased to be occupied does not seem to be known, but it is perhaps significant that in Gordon of Straloch's map, *circa* 1650, Raitloan is shown but not Rait Castle.

The well-known legend of the massacre of the Comyns by the Mackintoshes at Rait Castle is told in the *New Statistical Account*, and more fully by Bain;[7] but the difficulty is to dovetail the incident into the authenticated history of the ownership.

Somewhere near the castle was the chapel of St Mary of Rait, with a hermitage of which Nicholas the Hermit was the occupant in 1343.[8]

Barevan Church.

The ruined church of Barevan stands within its ancient kirkyard, surrounded by moss-covered tombstones, in a secluded position about two miles south-south-west of Cawdor, and at a height of some 500 feet above sea-level. It has been a plain oblong structure (fig. 9) measuring 70 feet 9 inches long by 20 feet 3 inches broad, within walls 2 feet 9 inches thick on the sides and 3 feet 2 inches in the gables—which last are reduced to mere foundations, while the side walls survive to a height of between 11 and 12 feet. The orientation of the church is 15° N. of E. It is

[1] *Thanes of Cawdor*, p. 14, etc. (see reff. in Index).
[2] *Ibid.*, p. 111.
[3] *Ibid.*, p. 154.
[4] *Ibid.*, p. 174.
[5] *Ibid.*, p. 217.
[6] *Ibid.*, p. 258.
[7] Vol. xiv. (Inverness), p. 449; G. Bain, *Hist. Nairnshire*, 2nd ed., p. 131.
[8] *Family of Rose of Kilravock*, p. 118.

built of good, though rough, well-coursed rubble, but the dressings are all very carefully carried out in yellow freestone. In the south wall, near the west end, is a pointed door which seems completely modernised, though it retains on the east side a bar-hole 5 feet long. The middle part of this wall shows a couple of lancet windows, and immediately east of them a second door, narrow, likewise modernised, but with a plain pointed arch that looks old. There are three courses in the thickness of the wall, each course being of two stones. At the east end is a two-light window, and beside it a double piscina. The north wall near its west end bears evidence of a slap infilled; no doubt there was the usual third door here. On the inside of this wall a plain freestone corbel and a bat-hole indicate the position of the rood screen, dividing off a

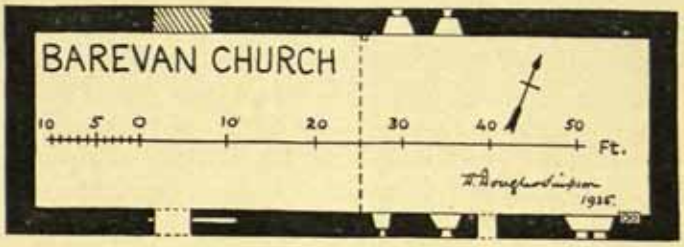


Fig. 9. Barevan Church: Plan.

chancel about 32 feet in length. Immediately beyond the screen are a couple of lancet windows.

The architectural features of the little church, though simple, are of distinct merit. The lancet windows (fig. 10) have daylight measurements of 4 feet 6 inches or 5 feet 6 inches in height and 1 foot 1 inch broad: externally they show a 4-inch chamfer continuous on arch and jambs. In each case the arched head is cut out of a single stone. Internally these windows (fig. 11) have depressed pointed rear arches with a 3-inch chamfer, dying out on the jambs.[1] As stated already, the large double-lancet window in the south wall (fig. 12) very closely resembles those at Rait Castle, except that it shows externally a double, deeply hollowed chamfer on the main arch and jambs, with a hood moulding hollowed underneath and resting upon stops, of which the western is foliaged, while the eastern has been left plain. The mullion and inner lancets have filleted rounds instead of the cavetto. The rear arch (fig. 13) is of elliptic form, with a 4-inch chamfer, omitted on the jambs. As at Rait, the whole head of the inner order, comprising the lancet tops and the lozenge between, is wrought in a single stone, and hence has survived

[1] The west window in the south wall is now lintelled internally.

though the mullion is gone. The over-all daylight dimensions of this fine window are: height, 6 feet 7 inches; breadth, 3 feet 6 inches. All the windows in the church are bored for bars and checked internally for casements. The piscina niche has had its arch and jambs robbed; the base is a square freestone block, projecting 2 inches from the wall, chamfered underneath, and containing two bowls, 8 inches in diameter, each with a central drain, uniting below.

[*Photo : J. Craig.*

Fig. 10. Barevan Church:
Lancet Windows, south side, exterior.

[*Photo : J. Craig.*

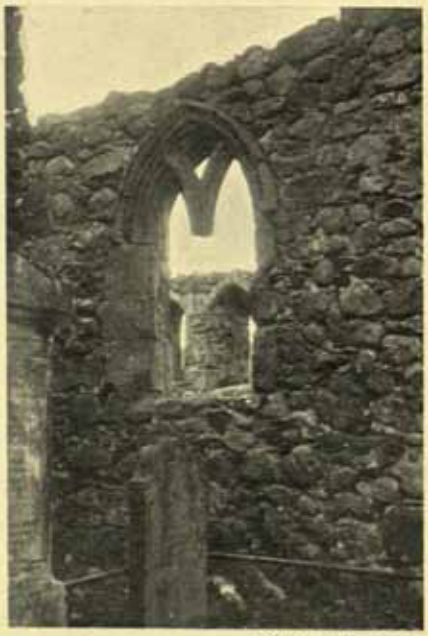
Fig. 11. Barevan Church:
Lancet Windows, north side, interior.

A number of moulded fragments lie outside the south wall of the church, and behind it to the north is a stone coffin of mediæval date, with a rest separately cut for the head. To the south and south-west of the church lie some late mediæval grave slabs: these are now almost totally submerged in moss and coarse grass, but are described and illustrated by the late Mr Hugh R. Young of Burghead in a paper on Barevan Church communicated to the *Reliquary* in 1901.[1]

The history of this most interesting church appears to be almost a complete blank. A very fine Celtic bell, said to have formerly belonged

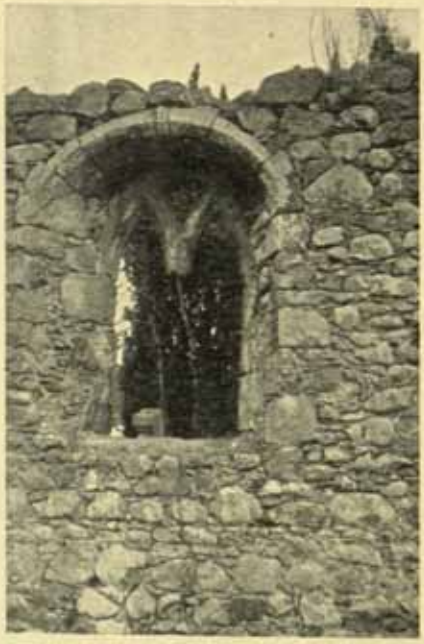
[1] New Series, vol. vi. pp. 47–52.

to it, is now at Cawdor Castle. Apparently Barevan Kirk had been the original parish church of Cawdor, and was superseded by the present church in 1619. The early form of the name was *Brae-evan* or *Bra de Evan*, Evan presumably being the name of a Celtic saint.[1] In the *Exchequer Rolls* for 1457 we have the *villa ecclesie de Evan que vocatur Braa de Evan*.[2] In 1632 Cawdor parish is styled "the parochin of



[*Photo : J. Craig.*

Fig. 12. Barevan Church: Window in South Wall, exterior.



[*Photo : J. Craig.*

Fig. 13. Barevan Church: Window in South Wall, interior.

Barevan";[3] and in a memorandum dated 30th November 1725, drawn up by Sir Archibald Campbell of Clunes for the commissioners of his nephew, the Laird of Cawdor, we are told that

"the old burial place called Barrivan, of the Thanes and all the Campbells of Calder who dyed in the north preceding Sir Hugh's time [*i.e.* 1654–1716], where formerly the old kirk of Calder was, likewise needs to be repaired, which Sir Archibald conceives may be done for £10 Sterline, which he expects the Commissioners will comply with, for the honour and memory of the family."[4]

This survey of Rait Castle and Barevan Church was carried out in

[1] West of Barevan is the vitrified fort of Dun Evan.
[2] *Exchequer Rolls*, vol. vi. pp. 215, 376.
[3] *Book of the Thanes of Cawdor*, p. 275.
[4] *Ibid.*, p. 428.

April 1935 under the auspices of the Nairn Literary Institute, by which the expenses were defrayed. I have to acknowledge my warm thanks to the Council of the Institute for sponsoring the undertaking, and to Dr John Craig, F.S.A.Scot., and Mrs Craig for assistance in making the surveys. Colonel Baillie, Factor to the Cawdor Estates, kindly had some of the undergrowth around Rait Castle removed and the garderobe tower excavated during our visit. Mr John Calder in Raitloan and Mr Donald Johnston in Raitcastle provided us with ladders and were also most helpful in other ways. The photographs were taken by Dr Craig.

II.

A NEOLITHIC DOUBLE-CHAMBERED CAIRN OF THE STALLED TYPE AND LATER STRUCTURES ON THE CALF OF EDAY, ORKNEY. By CHARLES S. T. CALDER, A.R.I.A.S., F.S.A.Scot.

The Calf of Eday in the Orkneys is a small uninhabited island separated from the main island of Eday by the waters of Calf Sound. Near Caithness Geos on its southern side is a group of seven prehistoric monuments lying from 50 to 250 yards off the shore (fig. 1). Three of them are marked on the O.S. Map, two as "Erd Houses" and one as "Standing Stones," but recent investigation has proved that each one represents a Stone Age chambered cairn. The largest of these, whose true character was previously unknown and which could be identified only by the standing stones, is connected with two of the other structures by a later wall. Together they constitute the most northerly and most prominent members of the group (fig. 2). Writing in the year 1855 Farrer recorded this particular complex as a site having standing stones within the line of an "Ancient Rampart of stones and earth somewhat resembling the letter S in form" and having at each end the "foundation-stones of towers." [1]

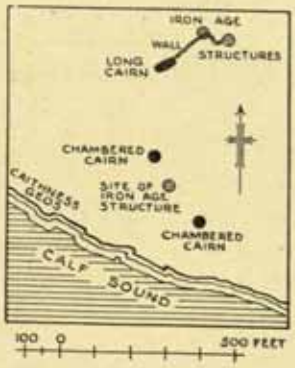


Fig. 1. Calf of Eday: Key Map of Monuments.

[1] *Proc. Soc. Ant. Scot.*, vol. ii. p. 156.

The Wall (1).

Little change has taken place since then, but what Farrer calls a rampart is merely a grass-covered stony ridge formed by the debris of a drystone wall. It is so ruinous that the original thickness is not ascertainable, but the spread is 6 feet wide. There are traces on the surface suggesting that the line, which is definite for a length of 85 yards, has extended southwards to the shore. With the exception of a short length at each of the ends, which return in opposite directions, the wall runs north-east and south-west (fig. 2). The northern extremity curves in a semi-circle around the south-western half of a shallow

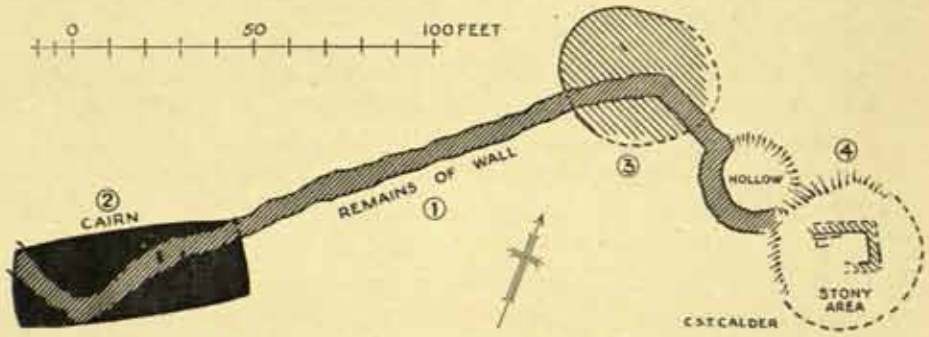


Fig. 2. Calf of Eday: Plan of Wall and Associated Structures.

depression, roughly 20 feet in diameter, before losing itself in a dilapidated stony mound. In its course the wall surmounts two other mounds, these being presumably the "towers" referred to by Farrer.

Its association with the mounds is the principal reason for the inclusion of the wall in this account, as, in itself, the ridge is of no more importance than the remains of any old dike which it resembles. The wall is certainly later than the mounds which were already heaps of ruins when it was built, and its relation to them is purely incidental.

The Cairn (2).

Towards the southern end of the ridge two erect slabs, S_1 and S_2 (fig. 3), stood parallel to each other 5 feet 6 inches apart, one just breaking the surface and the other rising to a height of 2 feet 6 inches above it; both, however, were reduced by weathering. From their position and general appearance it was felt that they did not fit into the category of Standing Stones to which they had been assigned. This

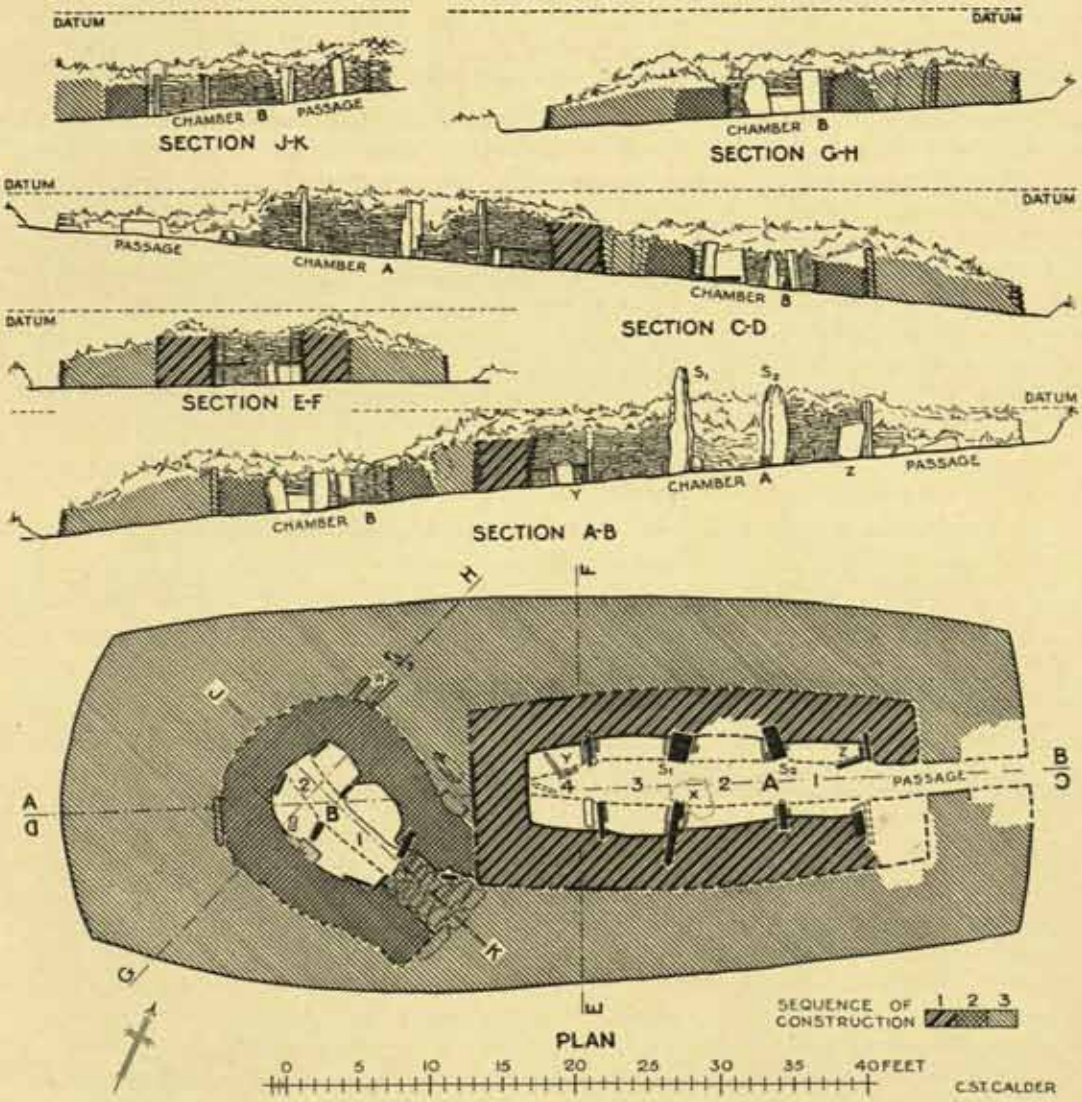


Fig. 3. Stalled Cairn, Calf of Eday: Plan and Sections.

idea led to a trial investigation which confirmed the view that they belonged to a structure underneath, from whose walls they projected as partitions.

Subsequent excavations disclosed the existence of a long, neolithic, chambered cairn of the stalled variety (fig. 3), the lay-out of which was identical in many respects with the Rousay cairns that have recently been placed on record by Mr Walter G. Grant and Dr J. Graham Callander.[1] In addition to four of the type excavated in Rousay, four others are supposed to exist there, but the cairn now being described is the first example to be examined outside that island in recent times. Eighty-two years ago, what seems to have been a cairn of the stalled type was excavated in the Holm of Papa Westray.[2] Our monument, however, is distinguished in its internal arrangement from the Rousay group by the occurrence of a most unusual combination of two differently designed chambers, A and B, lying in juxtaposition; one is long and high and the other round and low, but both contain stall-like compartments. Whether or not a single chamber was contemplated originally is a point that cannot be answered satisfactorily, but it is certain that the completed design allowed for the incorporation of both. This is made clear by a glance at the finished outline, where the sweep of each side wall runs in a sweet unbroken curve from one end of the cairn to the other with an obvious allowance for the presence of the second chamber. This contention is further strengthened by the fact that no outer wall has been built as part of either chamber on the line of contact between them. Other cairns containing two or more chambers are not unknown, but in this case, where two distinct types of chambers can be assigned to the same period, the chronological value of such a relationship is important.

Three successive stages of operations are apparent, but whatever length of time elapsed between them, it was not long enough to bring the last stage beyond the limit of the late Stone Age in Scotland. The long chamber, A, was the first part to be built; chamber B, which abutted against its back wall, was the next; and the massive outer wall encasing both chambers was the last. The addition of the latter created the double-wall feature which has been observed in the Rousay cairns and in other types elsewhere. The inner wall of chamber A, measuring from 3½ to 4 feet thick at the sides and

[1] *Proc. Soc. Ant. Scot.*, vol. lxviii. pp. 320–50; vol. lxix. pp. 325–51; vol. lxx. p. 407; another cairn of the type (Blackhammer, Rousay) will be recorded later in this volume.

[2] *Ibid.*, vol. ii. p. 62.

about 1 foot more at the inner end, was built of drystone masonry faced on both sides with horizontal courses of rubble. That of B, which was mainly 4 feet thick, was of similar construction but of inferior workmanship. This was most noticeable in the facing of the passage and in the very rough rubble of the outside face where it was exposed. The position of the outer faces of the inner walls was verified only so far as was thought necessary, the parts which were not examined being assumed and indicated on the plan by a

Fig. 4. Stalled Cairn, Calf of Eday: south-east corner of Outer Wall.

broken line. What remained of the outer casing wall varied in thickness from about 7 feet at the sides to 10 feet at the western end. It showed well-built horizontal stonework on the face without any projecting footings (fig. 4). The stones of the lowest course appeared to have been selected for their larger size and squareness and the quoins seemed to have been finely adjusted to suit the convexity of the sides and ends. At some places a batter was evident, but at others the wall-face was vertical, a circumstance which might be due to thrust. On the north, at a point almost in line with the outside of the back wall of chamber A, a slight change in the character of the masonry was noticed. The stonework, however, was well bonded and the face showed no more signs of

interruption than would be caused by a temporary stoppage in its erection.

The cairn measures 66 feet long and 27 feet wide; the walling survives to a general height of 2 feet on the outside and to 4 feet in places within the long chamber. On account of its following the slope of the ground one end is 6 feet higher in level than the other. The main axis lies north-east and south-west, and, unless there be a special significance in this particular orientation, it is difficult to explain why the cairn should have been built lengthwise with the slope when, by building across it, a more level foundation would have been obtained.

The entrance-passage of chamber A, measuring 11 feet long and 2 feet 2 inches wide, is situated in the middle of the higher end, but it is now without lintels and is much destroyed. There is no evidence that it had ever been sealed up. Only two or three courses of masonry remain in parts of the north side, while one large solitary block is all that is left on the south. The inner end of the passage passed through a gap between the inner edges of a pair of upright stones erected opposite each other to form the eastern end of the long chamber, but the southern slab is now missing. The chamber (fig. 5) extends almost half-way through the length of the monument; it measures 23 feet long and from 5 to 7 feet wide, while its original height had been considerably greater than that of the tallest upright stone still existing. This attains a height of 7 feet measuring from the floor to its weathered top, and it is identifiable with the taller of the two stones, S_1 and S_2 (fig. 3), which alone marked the position of the structure before our excavations began. A built wall, with an inward overhang of 10 inches in its present height of 3 feet 6 inches terminates the inner end of the chamber. The latter is divided somewhat irregularly into four communicating compartments by three more pairs of slabs set up opposite each other. The compartments range from 4 feet 6 inches to 6 feet long and from 5 feet to about 7 feet wide. Each upright slab is fixed edgewise into, and projects from, the side walls in a manner reminiscent of a row of stalls on either side of a central gangway or corridor. The intervals between the inner edges of each pair of stones vary from 2 feet 9 inches to 3 feet 6 inches. There is a very slight inward corbelling in the upper courses of the side walls. All the upright slabs are broken on the top. They range from 3 inches to 1 foot 5 inches in thickness, the latter size being that of the tallest stone. Against each side of the partition slabs, small stones set on edge, the highest rising 1 foot 4 inches above the floor, have served not only as packing for rigidity but as supports for stone shelves. A single shelf, it is assumed, may have been provided for each

stall since the presence of such was certain in the two inner compartments. A broken slab which had been used as a shelf was found in position, though loose, in the north stall of compartment No. 3, and leaning on edge against it was another, broken in two pieces. This, presumably, had been the slab originally in the corresponding stall on the south side. In compartment No. 4, each of the stalls contained a shelf, 2 feet wide and 1½ inch thick, one end being built into the back wall, and the other supported by a slab on edge close to the upright. Both

Fig. 5. Stalled Cairn, Calf of Eday: Interior of Chamber A, looking west.

shelves were in such a shattered condition that they could not be preserved *in situ* after clearance. At right angles to the back wall, between the ends of the shelves, was a thin slab set on edge, but it had been dislodged. It may have been a low divisional stone similar to one, underneath the shelf in the north stall, which divided the space into two irregular parts. The eastern part, marked Y on plan, was boxed in by another slab covering half the front, the space so enclosed measuring 1 foot 10 inches long, 1 foot 8 inches wide, and 1 foot 4 inches high. On its floor lay a small quantity of broken and badly decomposed bones of a human being and of an otter, which are reported on later. A slab construction, Z, measuring 2 feet long, 1 foot 10 inches high, and from 9 inches to 1 foot 5 inches wide,

forms, along with the remaining upright at the entrance and the side wall of the compartment, a sort of recess which contained shell and bone refuse mixed with peat ash; opposite, on the south side, there were slight indications of a similar structural feature. Their purpose here was not apparent. The floor of the chamber, as well as that of the passage, sloped in keeping with the foundations, and from the entrance to the back wall the declination amounted to 2 feet 6 inches. The floor consisted of a layer of blue clay lying on the natural buff-coloured clay subsoil. It may be mentioned that the whole foundation of the cairn seemed to rest on the blue layer, the material of which, it is understood, does not occur nearer than the south end of Eday. In this connexion, too, may be cited a notice of a chambered cairn at Clady Halliday, Tyrone,[1] wherein it is stated that "Underneath the whole monument was a ritual clay floor which had been laid after the erection of the orthostats and peristalith."

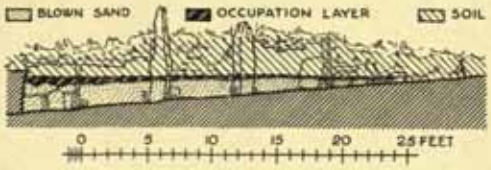


Fig. 6. Stalled Cairn, Calf of Eday: Section, on line A–B, of Chamber A, showing Occupation Level.

At a later period, when the chamber had become roofless and ruinous, the original clay floor was covered by a filling of blown sand. This was wedge-shaped in section, increasing in depth from zero at the entrance to 2 feet 6 inches at the inner end, while it maintained a fairly level surface throughout (fig. 6). On top of this there was an accumulation of refuse from 3 to 4 inches in general thickness, but with pockets of peat ash as much as 1 foot deep in the inmost compartment. This layer represented an occupation floor probably of the Early Iron Age. As well as the peat ash it contained, amongst peaty humus, broken pottery, animal and bird bones, and a large quantity of shells, mostly of limpets. All was covered by a growth of peat and heather, and throughout the respective layers there were many fallen stones.

The smaller chamber, B, which measures 10 feet long by almost 7 feet wide, was set with its main axis at an angle of 45° to the back wall of the larger, A, immediately adjoining the latter in such a manner as to leave the entrance just clear of its south-west corner. The purpose of this singular arrangement might have been concealment, which was successfully accomplished by placing the entrance in a position most unlikely to be looked for or found. Indeed, even in an exposed condition during the excavations, its

[1] Congress of Archæological Societies. *Report* for 1935, p. 39.

situation was so unexpected that it was the last feature to be discovered, and that only after a close search. The entrance passage, which is somewhat irregular in shape and wider than normal, was deliberately closed up for the whole of its length by a well-laid infilling of stones, with some especially large blocks placed transversely outside its mouth. Moreover, it never extended outwards beyond the inner wall, and not only it but the entire chamber was further masked by the thick outer casing wall (fig. 7). The filling in of the passage

Fig. 7. Stalled Cairn, Calf of Eday: Outer Wall, and Chamber B, looking through Entrance-Passage.

may have preceded by some time the laying of the core of the outer wall, but under the circumstances it is more likely that both were done during the same operation. This entrance is 5 feet in length and from 3 to 4 feet in breadth, but, owing to the disappearance of the roofing slabs, its height is uncertain. It may be judged, however, to have been at least 2 feet 8½ inches, which is the height of an upright slab leaning apparently *in situ* against the wall on the right-hand side near the mouth. Any corresponding slab that may have existed on the other side has been removed. The passage continues to the rear of chamber B, as a central corridor through two compartments with stalls on either side. The stalls are contained between three pairs of upright slabs in the same way as those in chamber A, with intervals

of 1 foot 9 inches to 2 feet 3 inches between their inner edges. The middle pair are free-standing, with packing or shelf-supporting stones at the base, the two next the entrance complete that end of the chamber, but those at the other end are set against the face of the back wall. These uprights have little floor- or wall-hold and they have depended for steadiness on the weight of the roofing-slabs, which no longer exist. Each stall has a recessed concave back wall in contrast with those in the other chamber which are straight.

Fig. 8. Stalled Cairn, Calf of Eday: Interior of Chamber B, showing north Stalls.

In respect of height the difference is more pronounced, the slabs in chamber B being only from 2 feet 2 inches to 2 feet 9½ inches high. Only in the northern stall of compartment No. 1 has the floor been left undisturbed, and it consists of a single slab or shelf, 2 inches thick, resting on the clay (fig. 8). No doubt, the other stalls had been furnished with similar slabs. Behind the mid-partition on the south there are indications that that part of the wall-face had been rebuilt, and on that side also, in the inner stall, an intrusive upright slab leans against the wall. It forms no structural part of the original work and may belong to the later reconstruction, though, alternatively, it may only be a fallen stone.

The floor of the chamber has a slope of 10 inches from front to back

and is composed of clay like that of the long chamber. The height from floor to roof may be reckoned as having been at least equal to that of the tallest upright, 2 feet 9½ inches, but the height may have been increased to a little over 3 feet by the thickness of an eke-stone on the top. Such an expedient would be necessary with the shorter uprights, but, in any case, the chamber has been exceedingly low in comparison with chamber A. This lowness, along with other characteristics, brings this particular structure into close affinity with the two other cairns of the main group noted on the key map (fig. 1). The chambers of the latter, however, are partially sunk in living rock below the surface of the ground.

An infiltration of sand was present throughout the core of the outer wall of the chamber, but the absence of blown sand in the chamber itself seemed to indicate that a low-set roof was still intact when the sand-drift occurred. The interior was filled with black peaty earth mixed with a quantity of peat ash, suggesting a later occupation. Outside the north wall of compartment No. 2 three slabs, W, set loosely on end and reaching down to the clay bed, were arranged in box-like fashion with the rough wall-face of the chamber closing one end. The slabs were not in contact with each other and the gaps between them, as well as the space inside, were completely filled with the stones from the core of the outer wall, a fact which made it appear that the formation was merely fortuitous. No doubt this was also the case with two or three single slabs leaning against the outer face of the inner wall, where they had probably been dumped in reserve during operations and afterwards left as part of the filling to save the trouble of their removal.

The yield of neolithic relics from the cairn, though falling short of expectations raised on the trial digging, was considerable. Portions of at least thirty-four vessels of clay have been identified by Dr Callander, who has described the pottery from this and from the other structures at the end of this paper. Nearly all of it was collected during the preliminary excavation from the original floor of compartment No. 2 of chamber A, in the small area within the dotted lines marked X on plan; the other compartments, cleared later, were disappointingly barren. It seems that the whole lot had been gathered together and thrown in a heap, where it was found below the sand amongst black, greasy, peaty humus and peat ash. Along with the pottery were found two leaf-shaped arrow-heads, one broken, and a possible third one damaged, a short knife, two scrapers, and several unworked flakes, all made of flint (fig. 9). The presence of fire in the mixture was attested by the peat ash, carbon, small pieces of calcined bones, and the calcination

of all the flints, while soot and ash adhered to the pottery. Two axes of sandstone were found on the shelf above the skeletal remains in

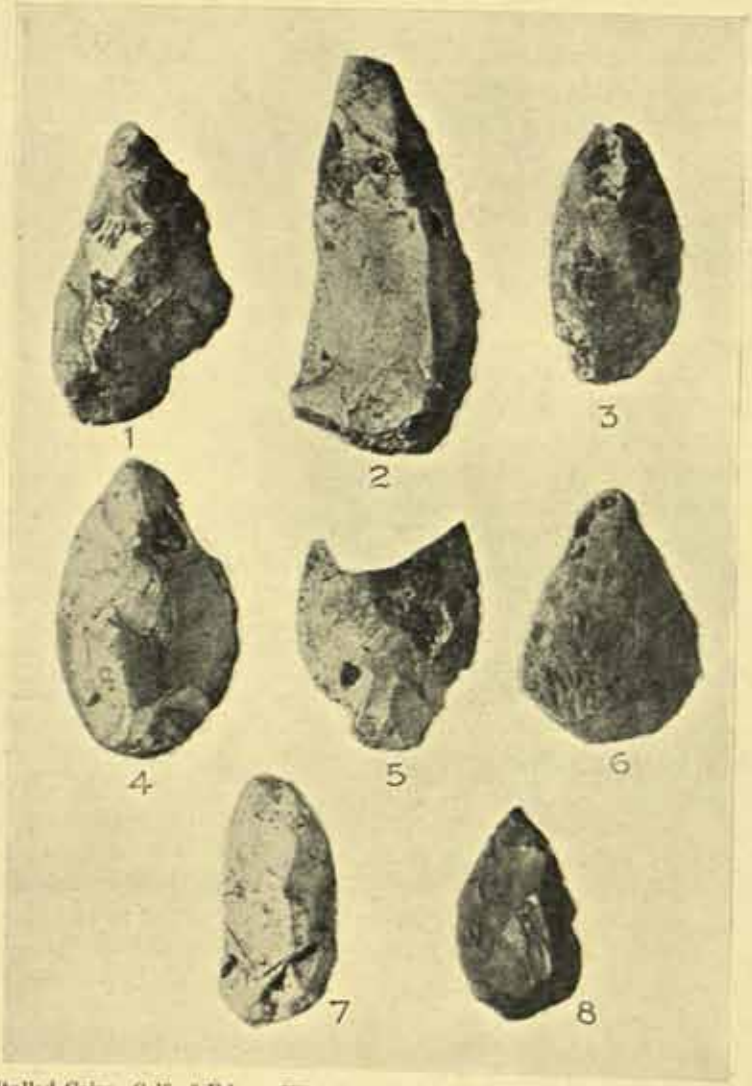


Fig. 9. Stalled Cairn, Calf of Eday: Flint Implements. 1, 3, 7, and 8, Scrapers; 7 is from occupation level; 2, Knife; 4 and 5, Arrow-heads; 6, a Flake. (⅓.)

compartment No. 4 (figs. 10 and 11). The larger measured $6\frac{1}{2}$ inches long and the smaller only $2\frac{3}{4}$ inches long. Mr Walter G. Grant has

Fig. 10. Stalled Cairn, Calf of Eday: Axe of Sandstone. (½.)

Fig. 11. Stalled Cairn, Calf of Eday: Axe of Sandstone. (½.)

pointed out to me that, up till now, the association of stone axes with Scottish neolithic burial structures is of rare occurrence. Only two instances had been recorded, one axe being found in a horned cairn at Lower Dounreay, Caithness, and the other in a cairn at Clachaig, Arran. To these have now to be added two others which Mr Grant found recently in cairns at Blackhammer and at Lairo, Rousay, two more recovered from cairns which I have excavated this year—one at Huntersquoy, Eday, and another near Caithness Geos on the Calf of Eday—and the two just described. The last two being from a single cairn, the total number of localities of such finds therefore amounts to seven.

A small flint scraper of indeterminate period was found in the thickness of the broken-down wall on the south side of the entrance-passage.

From the domestic level the yield included, from compartment No. 3, shards of a decorated pottery vessel, and, from No. 4, fragments of plain pottery, a calcined flint scraper (fig. 9, No. 7) and a broken implement of split bone. The latter measured $3\frac{1}{4}$ inches long and it was smoothed and rounded at one end. There were also skeletal remains of animals—ox and sheep—and of birds—cormorant, shag, sea-eagle, black-headed gull, and herring-gull. The bones have been examined by Miss Platt, whose report is appended.

In addition to the above relics from chamber A, a find of two deer-horn tines and some animal bones must be included tentatively as being within the domestic period. These were found by the proprietor, Major Harry H. Hebden, M.C., who had previously dug down in the space between the exposed uprights, S_1 and S_2, in front of the line of the inside wall-face which at this part had been torn out. The actual depth of the find was not noted precisely at the time, but the shell-layer had been reached. One tine, measuring $8\frac{3}{4}$ inches long, still remains in possession of Major Hebden at Carrick House, and the other, along with the bones, was presented by him to the Stromness Museum.

The objects of the latter level belong to the Early Iron Age, which may also be the period of the comparatively few relics found in chamber B. These consisted of small bits of calcined bones, three flakes of flint, two of which were calcined, and broken pieces of thin-walled plain pottery. The pottery fragments were found throughout the debris down to the floor of the chamber and also amongst the stones which filled the passage. Pieces of eight different vessels were noted.

Outside the northmost corner of the cairn there were found pieces of plain pottery, and from other parts round about, a rough stone, measuring $9\frac{1}{4}$ inches by 6 inches by $3\frac{1}{4}$ inches, with a square dish-like

cavity pecked out on one side, two small angular stones, each with a pecked-out cup-like hollow on one face, and a few broken rude stone implements. These may also date from the late occupation.

Structure 3.

The third structure of the complex lies 33 yards from the last, underneath the north-eastern return angle of the ruined dike first described. Prior to investigation only the top of an upright stone, A, was to be seen. It measured 1 foot 10 inches wide by 5 inches thick, and stood 2 feet 6 inches above the surface to the north of the line of the dike, in a hollow scooped out of the top of a low grass-covered mound. Lack of time accounts for only a partial excavation being made, but even this extended to the digging of half the area before anything like a coherent scheme could be made out (fig. 12). The mound had accumulated over the ruins of an oval building which when complete might have measured approximately 41 by 38 feet in cross diameters. As far as could be made out, one chamber only was contained within the building. The outer face of a wall, discovered just under the turf, had been reduced to its lowest courses, and measured 1 foot 8 inches in height above the natural clay. It followed the western curve of the oval outline for fully half its circumference, beyond which it could not be traced. The inner face of this wall was much broken down and parts were awanting. At the highest it stood only 3 feet 6 inches above a floor which, so far as uncovered, consisted of well-fitting paving-slabs laid on the clay subsoil. It was found that the slab A was built edgewise into and flush with the wall and that it rose to a height of 5 feet 3 inches above the floor. Two deep and irregular recesses, R_1 and R_2, opening off the chamber were constructed in the main wall, which varied from 7 feet and 8 feet 3 inches in thickness behind them to 14 feet 6 inches in the solid between. The stumps of two thin slabs, B, remained in the western recess but appeared to have stood clear of

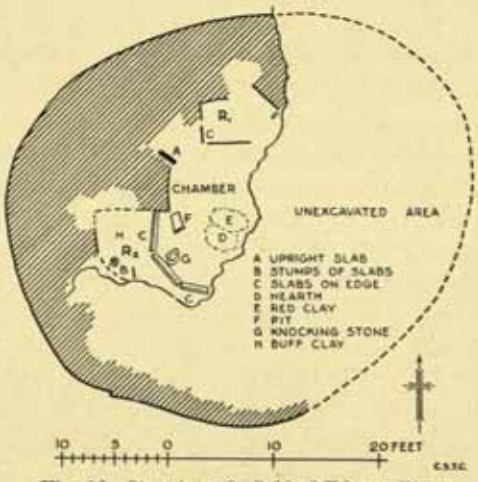


Fig. 12. Structure 3, Calf of Eday: Plan.

the wall-face, which here was totally destroyed. The northmost slab had been kept erect, partly at least, by a packing-stone fixed on edge on either side. The surviving west side of recess R_1 was extended 1 foot 6 inches by a thin slab placed on edge and measuring 1 foot 9 inches high, and another measuring 4 feet 3 inches long, 1 foot 10½ inches high and 2½ inches thick was placed at right angles along the front. Three thin slabs also on edge, and measuring from 2 feet 9 inches to 4 feet long, were set end to end along the front of recess R_2 on lines conforming to three sides of an octagon. None of the slabs had a secure floor-hold and the latter three leaned over precariously; all are indicated on the plan by the letter C. On the floor at D a slab had suffered badly through use as a hearth. It was much shattered and fire-fractured, but it did not appear to be different from the rest of the pavement nor to have been laid specially as a fireplace. Impingeing on its northern edge was a mass of reddish clay, E, covering an area of some 3 feet in diameter and overflowing from a small box-like arrangement formed of four, thin, loose stones roughly laid on bed on the floor. Three feet west of this, a small pit, F, measuring 2 feet long by 1 foot 2 inches wide at the south end and 10 inches at the other, had been sunk to a depth of 1 foot 4 inches in the floor. It had a stone-built lining and a paving-slab for a cover, while a loose flat stone leaned against and almost covered its south end. The pit (fig. 13), which had a layer of fine buff-coloured clay in the bottom, was half full of water and there was a small heap of pebbles in each of its two western corners. Before the mid-frontal slab of recess R_2 there was a mortar, G, which had an oval-shaped hollow measuring 10 inches by 8 inches by 4 inches deep. In the recess itself was a thin layer of local buff-coloured clay, H. Both mortar and clay appeared to be separated from the paved floor by a thin layer of black peaty soil. It may be mentioned that the recess was also paved with stones very closely fitted together.

The interior of the chamber north of the fireplace was filled with an accumulation of black peaty earth distributed through a mass of debris, but the area on the west, particularly in the recess, was solid with peat ash containing innumerable fragments of plain flat-bottomed pottery of red, buff, and black colour; in the higher level the bones of a large animal were found. The amount and variety of pottery from so small a space seems to me to be satisfactorily explained only by concluding that the building had been or had become a potter's workshop and that the fragments in the heap represented discarded pots. Thus also would the presence of different clays be accounted for. Further, it is possible that the pit had been used as a receptacle for the washing

of the clay, the coarse raw material being rubbed against the flat stone at its south end and the pebbles being freed and pushed aside. The pottery would have been baked in the fire on the hearth. The use as a potter's workshop, however, may have been a late adaptation of the chamber, and a few of the details would seem to support this idea. For instance, the hearth was not constructed specially as a fireplace, and also the wall-face of recess R_2 appeared to have been torn out before

Fig. 13. Structure 3, Calf of Eday: Interior of Chamber showing Pit, Mortar, and western Recess.

the peat ash and pottery had accumulated and the stumps of the uprights, B, had been covered over by the rubbish.

The ravages of time, as well as the damage caused by haphazard digging, has apparently robbed the mound of so much of its character that even after this latest investigation there is a feeling of uncertainty which may be dispelled only by a complete exposure of all the features. The evidence establishing its domestic nature is seen in the numerous stone implements [1] found in and about the building, which are suggestive of the Early Iron Age.

In addition to the mortar these include the following:—

Two small boat-shaped saddle-querns, of which one is slightly broken.

[1] For types of some of the implements see *Proc. Soc. Ant. Scot.*, vol. lxvii. p. 97, fig. 13, p. 104, fig. 18, p. 106, fig. 21, and p. 107, fig. 22.

Each is rounded on the under side by pecking and the concavely rubbed face shows small pit-marks. The stones measure $12\frac{1}{8}$ inches by 5 inches by $2\frac{3}{4}$ inches, and $9\frac{1}{2}$ inches by $4\frac{3}{4}$ inches by 2 inches.

An exceptionally large rude stone implement which was found with a few pieces of pottery in the pit (fig. 14). It weighed 10 lbs. and

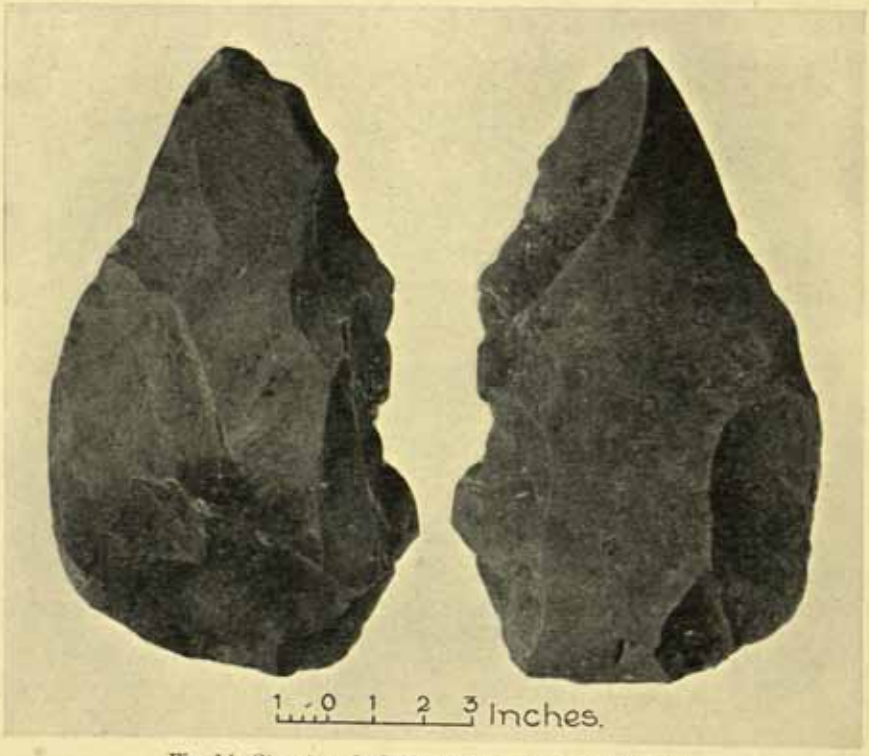


Fig. 14. Structure 3, Calf of Eday: Stone Implement.

measured 13 inches by 8 inches by $2\frac{3}{4}$ inches. The edges of the stone were flaked.

Half of a flat-sided heart-shaped stone broken through the middle of a biconical perforation which measures $2\frac{1}{8}$ inches in diameter on the outside and $1\frac{1}{2}$ inch in diameter in the middle. The object measures 6 inches across the break, 5 inches along each side, and it is 2 inches thick.

Three club-like implements with their sides converging to blunt-pointed butts and all shaped by chipping, measuring $11\frac{1}{4}$ inches by

$3\frac{1}{2}$ inches by 2 inches, 10 inches by 4 inches by $1\frac{1}{2}$ inch, and $8\frac{1}{4}$ inches by $3\frac{3}{4}$ inches by $1\frac{1}{2}$ inch.

Another club-like implement of oval section, tapering more sharply to a point at one end than the other so as to give a grip for the hand. The surface is finished with small pit-marks and the stone measures $9\frac{1}{2}$ inches by $1\frac{3}{4}$ inch by $1\frac{3}{8}$ inch; five broken tools of similar type.

Two flat triangular objects with chipped bases; each measures 6 inches long and $4\frac{1}{2}$ inches across the base, and $1\frac{7}{8}$ inch and $\frac{7}{8}$ inch thick respectively.

Four pounders of usual type, worked at each end; two of them are pecked on the sides, probably to give a better grip.

A spherical hammer-stone measuring $3\frac{1}{8}$ inches in diameter.

A rude cleaver made by chipping a flat stone all round and shouldered for a handle. It measures $8\frac{1}{2}$ inches by $5\frac{1}{2}$ inches by 1 inch.

A rectangular knife-like implement chipped on one edge and on one end; measuring $7\frac{3}{4}$ inches by 4 inches by $\frac{7}{8}$ inch.

Another of similar shape but chipped on the faces and round the edges; measuring $7\frac{3}{8}$ inches by $3\frac{1}{2}$ inches by 1 inch.

Seventy unworked flakes varying from $2\frac{1}{2}$ inches in diameter to 8 inches by $6\frac{1}{2}$ inches in cross diameters.

A scraper, made of a flake chipped round part of the edge on the smooth side, measuring $3\frac{1}{2}$ inches in diameter.

Six flat unworked discoid stones varying from $3\frac{1}{2}$ inches to 6 inches in diameter; another, worked on one side and measuring $4\frac{3}{4}$ inches in diameter, which may be a pot-lid.

Nearly all these objects have been made from water-worn beach-stones.

A scraper, a worked piece, and four flakes of flint.

Eight pieces of pumice-stone, one or two showing signs of wear.

A fragment of the wall of a steatitic pot with the mark of a perforation across one of its broken edges.

Structure 4.

The fourth construction (fig. 2) at the end of the dike need only be alluded to briefly as it was left practically untouched. It lies between 30 feet and 40 feet south-east of the last in a stony grass-covered mound which is now so low that there can be little structure left in it. In the middle of the mound are the foundations of an oblong chamber which is set with its main axis lying east-north-east and west-south-west. The western end is missing but the chamber has measured at least

14 feet long by 8 feet 6 inches wide, within walls 3 feet thick. The masonry has been reduced to 1 foot 6 inches in height at most and it rests on 1 foot of black earth above the natural clay. There was no sign of a paved floor, but only a very small area was examined at the south-east corner. Appearing above the surface just inside the broken end of the northern wall four slabs were set on edge so as to form three sides of an open-ended box, two of the slabs being in alignment on one side.

No relics were found, but judging from what little evidence there is, a probable date for the erection is also the Early Iron Age. The circular depression adjoining may well be contemporary in view of the fact that the later supposed dike makes a detour round it.

I have to express my gratitude to Major Harry H. Hebden, M.C., who readily consented to the examination of the monuments and gave me an entirely free hand in their excavation. The Society is indebted to him for the presentation of the most important relics to the National Museum. I should also like to acknowledge my appreciation of other privileges accorded me, Sir George Macdonald having defrayed part of the travelling expenses and our Society having met the expenses of the workmen, thereby enabling me to undertake a more extensive and a more exhaustive exploration than would otherwise have been possible. Thanks, too, are herewith expressed to Dr J. Graham Callander for his report on the pottery and to Professor Alexander Low and Miss Margery I. Platt for their reports on the human, animal, and bird bones. Finally, I should like to mention my indebtedness to my friend, Bailie W. M. Ritchie, Johnstone, for valuable assistance in the course of the excavations and to all the workmen whose enthusiasm and unsparing labour helped so much to lighten my task of supervision.

REPORT ON THE POTTERY. By J. Graham Callander, LL.D., F.S.A.Scot.

While excavating the two monuments on the Calf of Eday, just described, Mr Calder found a considerable quantity of pottery in each. The pottery from the long, stalled cairn belongs to two distinct periods, the Neolithic and Early Iron Ages of Scotland, but the shards from the other building, which he considers may have been used, at least ultimately, as a potter's workshop, belong to the later time. This, it may be mentioned, is the period of our brochs, earth-houses, and crannogs,

and many of the kitchen-middens in the Hebrides, all of which may be considered roughly contemporary with Romano-British times.

The Stalled Cairn—Chamber A.

Neolithic Pottery.

This pottery, like all the rest which was recovered, is so terribly smashed up that it has not been found possible to restore, and that only partially, the mouths of more than four vessels, though at least thirty-four are represented amongst the shards. After eliminating the pieces of rims over 17 lbs. of broken pottery remain, but although there is such a large quantity to work upon, the edges of the shards are so irregular, the size of many is so small, and the variation in colour of single pots so great, that only a few pieces have been fitted together. Still, from the curves on many of the fragments it was clear, even though there had been no tell-tale rim pieces present, that we had to deal with round-based vessels which pointed to a Neolithic date.

Carinated Urns.

1. Rim and wall fragments of a bowl of hard brown ware, the largest piece measuring $3\frac{1}{4}$ inches long and $2\frac{15}{16}$ inches deep (fig. 18, No. 1). About $1\frac{5}{8}$ inch below the rim, that is bevelled downwards on the inside, is a low moulding under which the wall curves into a rounded base. The space between the lip and the moulding, which is slightly convex, is occupied by reversed hatched triangles bordered by a single horizontal line above. The marginal line and those forming the triangles have been lightly incised by the steady pull of a sharp-pointed tool, but those filling the triangles display a stab-and-drag pattern made by unusually short and light strokes (fig. 15, No. 1). The wall is only $\frac{1}{4}$ inch thick.

2. Rim and wall fragments of a bowl of good hard ware, in parts black with a skin of brown colour on the outside, and at other places red both on the outside and inside with a black core (figs. 16 and 18, No. 2). The upper part between the lip and the shoulder, which is $1\frac{1}{2}$ inch high, is concave and entirely occupied with decoration, and the lower part turns in towards the base in a fairly quick curve. The vessel has been about $9\frac{1}{2}$ inches in diameter at the mouth[1] and about 10 inches at the shoulder. The top of the rim, though rounded, is flattish in places, and measures $\frac{5}{16}$ inch in thickness. The lower part of the vessel is also $\frac{5}{16}$ inch thick. As for the decoration, there are three lines encircling the

[1] The diameters of the mouths of the vessels are measured externally.

urn immediately under the brim, the spaces between them being filled with short lines, those above slanting from left to right and those below in the opposite direction so as to form a herring-bone pattern. Under-

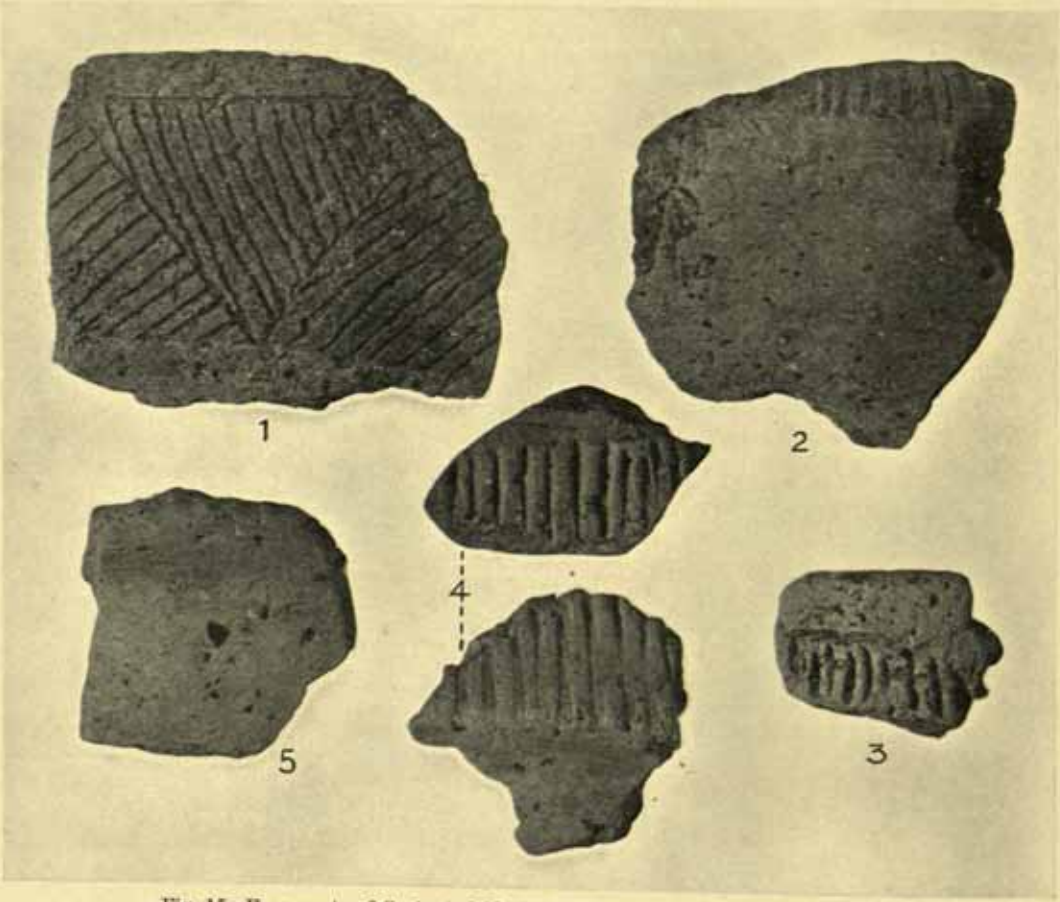


Fig. 15. Fragments of Carinated Neolithic Pottery from Calf of Eday. (½.)

neath are panels in the form of reversed truncated triangles hatched with straight lines alternately sloping in opposite directions. All the lines are sharply incised and have been made by a pointed tool (fig. 16).

3. Rim and wall fragments of about three-quarters of the upper part of an urn of hard red clay, which fit only in one or two places. But for the herring-bone pattern sloping in the opposite direction the scheme

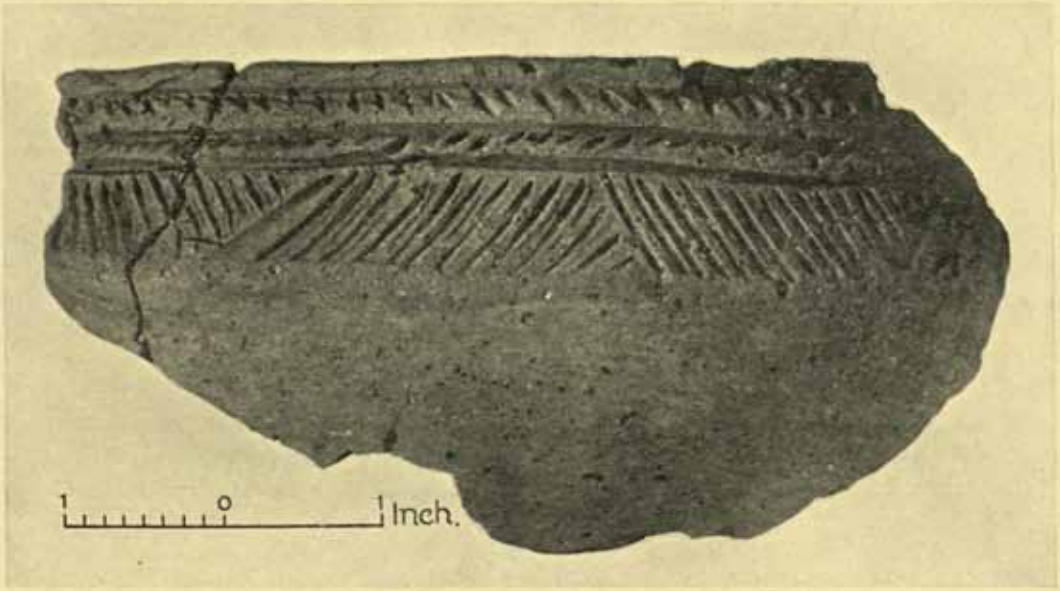


Fig. 16. Fragment of Carinated Neolithic Urn from Calf of Eday.

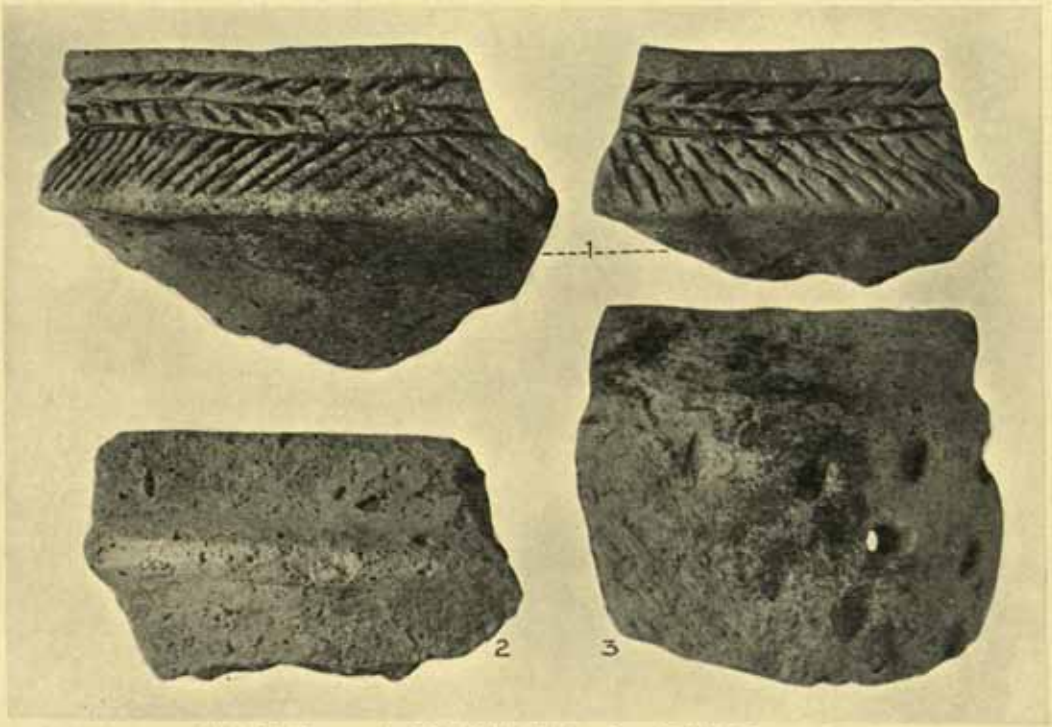


Fig. 17. Fragments of Neolithic Pottery from Calf of Eday. ($\frac{2}{3}$).

of decoration is the same as that seen in the last. The incised lines are generally made by a steady pull of a pointed implement, but at one place the point has been lifted at the middle of the line so as to form two short ones (figs. 17, No. 1, and 18, No. 3). The form also is very similar, though the carination is more pronounced and rather nearer the lip. The diameter at the mouth has been about 8 inches, and the wall, of which a height of only $3\frac{1}{2}$ inches survives, at most is $\frac{1}{4}$ inch thick.

4. Fragment of the wall of a vessel of dark ware, measuring $2\frac{1}{4}$ inches by 2 inches, showing a small part of the carination and of the wall below, the latter being $\frac{3}{8}$ inch thick. Doubtless it has been of the same form as the last two. On the upper side of the keel it is decorated with vertical incised lines (fig. 15, No. 2).

5 to 9. Rim and wall fragments of four, probably five, carinated urns of hard buff or red ware with no decoration. The vessels have all been of large size, possibly having a diameter at the mouth up to 13 inches. In some pieces the wall is $\frac{9}{16}$ inch and $\frac{5}{8}$ inch thick. Figs. 17, No. 2, and 18, Nos. 4, 5, and 6, show the form of the rims and upper parts of the wall, and fig. 17, No. 2, the vesicular character of the ware.

10 to 13. Small fragments of the carinated part of the wall of four different urns, three of dark-coloured ware and one buff-coloured on the outside. Three have been decorated above the keel with oblique incised lines and one seems to have been plain.

14. Fragment of a rim of bright red-coloured ware measuring only $1\frac{1}{4}$ inch long by 1 inch deep at most. The top of the rim is flat and measures $\frac{5}{16}$ inch thick. Immediately under the lip is a transverse line with vertical lines depending from it all incised with a narrow pointed tool (fig. 15, No. 3). Although so little of the urn remains, the ornamentation which it bears points to its having been of the carinated variety.

Urns not Carinated.

15. Rim and wall fragment of an urn of hard buff-coloured ware measuring $5\frac{1}{2}$ inches in length and 3 inches in breadth. The wall is vertically convex on the outside and shows a deep hollow moulding under the lip (fig. 18, No. 12). The top of the rim is flat and bevelled downwards towards the inside; it measures $\frac{5}{8}$ inch in width. The diameter of the mouth seems to have been at least 10 inches. What remains of the wall and the top of the brim are ornamented with finger-nail markings set obliquely. The nail has been inserted into the damp clay and a small piece dragged out, leaving a vesica-shaped hollow steeper on the one side than the other and the mark of the nail in the

bottom (fig. 17, No. 3). There is a small perforation $1\frac{1}{2}$ inch below the brim.

16. Rim and wall fragments representing rather more than half of the mouth of a vessel of very fine hard dark ware with a tinge of brown in places and rubbed smooth until it shows a gloss. At least only $2\frac{1}{4}$ inches of the wall below the lip is preserved. The urn has measured about $8\frac{1}{2}$ inches in diameter at the mouth, and the wall, which has a rounded lip measuring $\frac{1}{4}$ inch thick, increases to $\frac{3}{8}$ inch at a depth of $2\frac{1}{4}$ inches from the rim. There is a very faint suggestion of a hollow moulding just under the lip (fig. 18, No. 11).

17. Rim fragments of a large, plain, coarsely made bowl of dark brown ware extending to about one-third of the circumference of the mouth. At one place a piece of the wall measuring $4\frac{1}{2}$ inches in depth remains, but for the most part there is less than 2 inches. The rim is slightly rounded on the top with a gentle slant downwards towards the interior and a distinct curve on the outside. It projects both on the exterior and interior, in some places showing an undercut roll (fig. 18, No. 7). It has measured about 13 inches in diameter at the mouth, the rim being $1\frac{1}{8}$ inch broad and the wall $\frac{11}{16}$ inch thick.

18 to 30. Thirteen vessels, each represented by a small solitary fragment of the rim. None of the pieces measures more than $2\frac{1}{2}$ inches along the lip and $2\frac{1}{2}$ inches in depth, except one of bright red colour which is $2\frac{3}{4}$ inches and $3\frac{3}{4}$ inches in greatest length and depth. The surviving shards show that the upper part of the wall in every one had been vertical, the thickness varying from $\frac{3}{8}$ inch to $\frac{9}{16}$ inch. In seven the top of the lip is rounded, in one its inner edge is bevelled downwards, in four it projects slightly outwards, and in one it is flat (fig. 18, Nos. 8 to 11 and 13 to 15). Several of the vessels are buff-coloured, others dirty grey and black, and two bright red on the exterior. One of the smallest pieces, which is only $1\frac{7}{16}$ inch long and $1\frac{3}{8}$ inch deep, has a hole bored through it $\frac{5}{8}$ inch below the lip, and the largest fragment has a perforation $\frac{1}{2}$ inch down. Only one of the shards from these thirteen vessels gives an indication of the shape of the base, and this is the last one mentioned. The lower part of this fragment curves in distinctly, so that there is no dubiety about the bottom having been round (fig. 18, No. 13). It is more than possible that the other pots had the same peculiarity, especially the thicker pieces. Amongst the large collection of urns found in the chambered cairn at Unstan, also in Orkney, which is really of the stalled variety, there are fragments of several with vertical walls which we can claim were rounded below, although there is only one vessel of which enough remains to show the

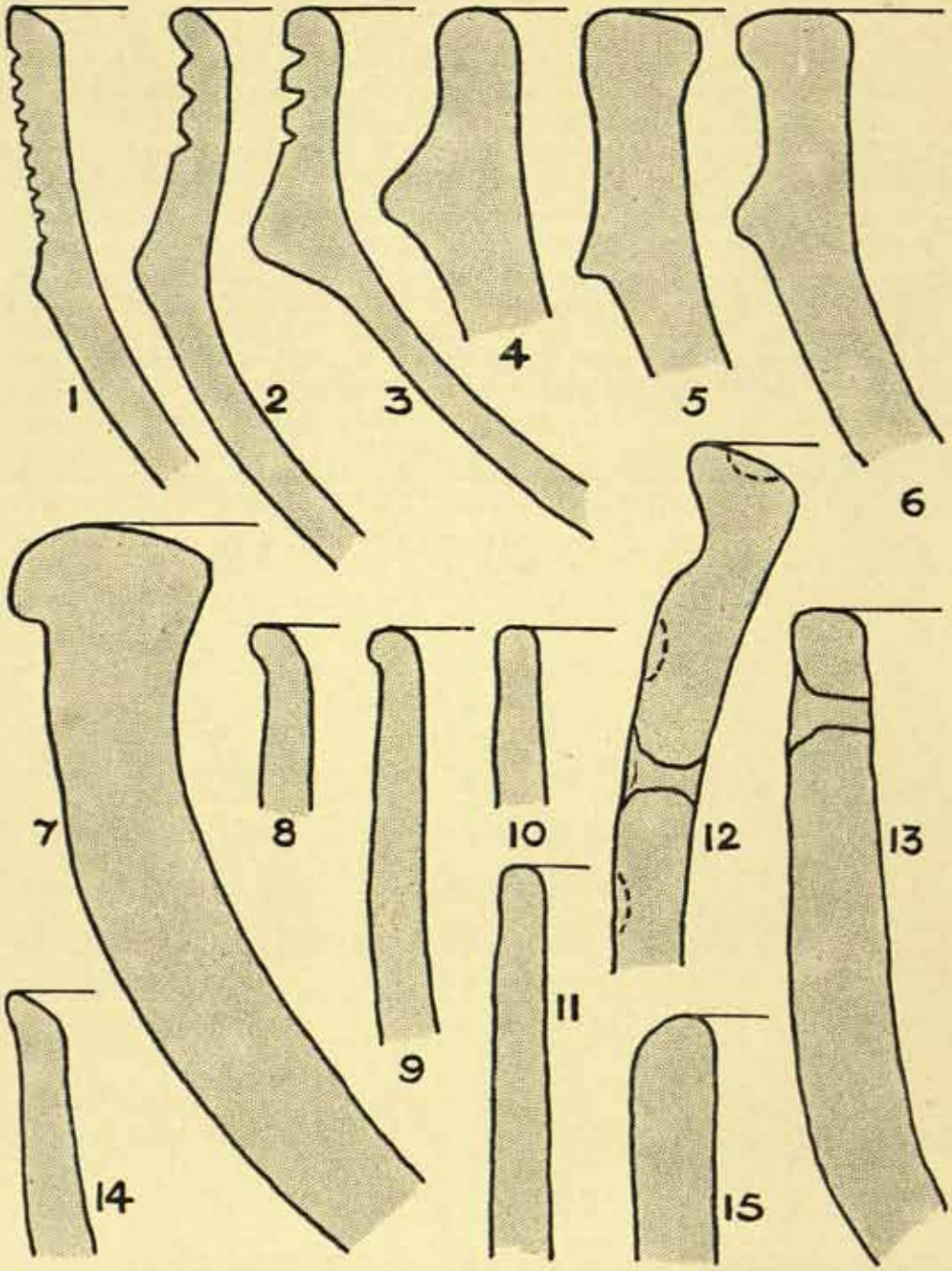


Fig. 18. Sections of Neolithic Pottery from Calf of Eday. (½.)

ingoing curve at the base.[1] None of these thirteen Eday pots is ornamented, neither are any of those with vertical walls from Unstan.

All the above pottery was found in a single mass in the Neolithic layer at the foot of the inner edge of the western divisional slab, on the south side of stall No. 2, at the place marked X on the plan (fig. 3). But a large handful of small broken fragments, the largest measuring only 2 inches by $1\frac{3}{4}$ inch, was found in the middle of the same compartment at its eastern end. This pottery was devoid of ornamentation and there were no fragments of rims amongst it. Close to this deposit, but in the adjoining compartment, No. 1, was a rather smaller quantity of pottery, in which were single small rim pieces of six different vessels, one bearing ornamentation and another coming from a carinated bowl broken off in the middle of the keel; in addition there were pieces of two decorated carinated urns broken off above and below the moulding. Among this lot were fragments from four urns which could not be matched in the big selection of pottery from compartment No. 2, so this number has to be added to the previous total of vessels identified, bringing it up to thirty-four at least.

Carinated Urns.

31. Very small rim fragment of a vessel of fine, dark brown ware, measuring only $1\frac{1}{8}$ inch long, $\frac{5}{8}$ inch deep, and $\frac{7}{32}$ inch thick. The top of the lip is rounded, and just below it are three incised horizontal lines which have encircled the urn.

32. Small rim fragment of buff-coloured ware with a reddish tinge, of good texture, measuring $1\frac{3}{8}$ inch by $1\frac{5}{8}$ inch. It shows a piece of the keel with the outer skin scaled off on the under side, the distance between it and the lip measuring $\frac{7}{8}$ inch. The top of the rim is flat and measures $\frac{9}{16}$ inch in thickness.

33. Small wall fragment of a vessel of fine, dark brown ware, glossy in places, measuring $1\frac{3}{8}$ inch by $1\frac{9}{16}$ inch, and showing a small part of the keel. The upper side of the carination is decorated with incised vertical lines. The wall is only $\frac{7}{32}$ inch thick.

34. Several fragments of fine, pinkish ware, with a black core, showing small portions of the carination with parts of the wall above and below it. The largest piece measures only $1\frac{1}{2}$ inch by $1\frac{1}{2}$ inch, and the wall is only $\frac{1}{4}$ inch thick. What remains of the ornamentation consists of a horizontal line with vertical lines, depending from it as far as the keel,

[1] *Proc. Soc. Ant. Scot.*, vol. lxiii. p. 45, fig. 14, No. 1.

all incised. None of the rim survives, and it is impossible to complete the decoration between it and the horizontal line (fig. 15, No. 4).

Generally the pottery is hard and of good quality, but the firing is uneven. Buff-coloured pieces often show the same tint all through; reddish pieces may have a skin of that colour on the outside only, or on the inside as well, the remainder being black; and in some single pots parts of the wall are burnt red or black through and through. The thickness of the walls varies from $\frac{11}{16}$ inch in the larger vessels to no more than $\frac{3}{16}$ inch in the smaller. In much of our Scottish Bronze and Iron Age pottery crushed stone has been added to the clay in varying quantities before the dishes were made, but this practice does not seem generally to have found favour with the Orkney potter of the Stone Age. In the larger pots crushed stone can hardly be detected, but in these some small pieces of stone, sometimes water-worn, are to be seen, as if clay containing very little grit had been selected. The clay from which the smaller vessels have been made has the appearance of having been washed. Some of the pottery is slightly vesicular in texture, and this applies even to the finest and thinnest shards. In the thick shards the cavities are much larger than in the thinner pieces. The vesicules are quite apparent in figs. 15, 16, and 17. A few of the shards have a gloss on the surface which is not a slip but which was probably formed by rubbing. Three pieces have a hole bored through the wall not far from the lip. All these peculiarities are to be seen in other Orkney ware of the Neolithic period—on urns from Unstan and the Rousay cairns.

When we compare the forms and decoration of the vessels from Eday with those from the other places in Orkney mentioned, we shall find that there are also striking resemblances. Wide-mouthed, shallow, carinated bowls, with or without ornamentation between the keel and the rim, and cylindrical pots with plain vertical walls and rounded bottoms prevail. Only two of the Eday vessels, of which enough survives to give an accurate idea of their form, are different in shape from any recorded from the other Orkney sites. These are No. 15 (fig. 18, No. 12) and No. 17 (fig. 18, No. 7), the first showing a deep groove under the lip, and the second a broad, projecting, rounded rim. Regarding the decoration, hatched reversed triangles are a favourite motive, and though only one solitary vessel from Eday, No. 1 (fig. 15, No. 1), exhibits the stab-and-drag process, it is an interesting piece because of the lightness and delicacy of the lines. Also only one vessel, No. 15, shows finger-nail markings (fig. 17, No 3), but this style of decoration is rare on the other sites.

Considered as a whole it would be impossible to mistake this collection of pottery as coming from any place outside the Orkney Islands.

When Mr Calder made his trial examination of the cairn, in 1935, and discovered this hoard of Neolithic pottery it was expected that a complete excavation of the monument would be rewarded by the discovery of more vessels and human remains of the period, but this hope was doomed to disappointment, as very little more pottery was recovered and skeletal remains were scanty and in poor condition. However, if the results in the matter of finding such relics were not what was desired, there arises the question why so much broken pottery should be concentrated in one spot.

We know from Mr Walter G. Grant's excavations of stalled cairns in the island of Rousay that these tombs had been entered after the time of the first burials, possibly when later ones took place. It would appear that pottery previously deposited had received scant attention from newcomers, as not only did vessels get broken but fragments of them were tramped into the floor. This happened in the Midhowe cairn, where human remains were very plentiful and pottery scarce.[1] It may be that something similar had happened in the Calf of Eday cairn. Certainly the pottery found in the cairn must have been heaped together before the roof of the chamber collapsed, and, as the greater part of most of the vessels was wanting, it looks as if most of the pottery had been thrown out of the chamber altogether. It might be suggested that the vessels had been removed from their original positions to make way for the reception of later burials. If this were so, it would seem to indicate a want of reverence, if not for the dead, for the grave furnishings that had been deposited with them. But we have no indication of how many bodies were buried in the cairn, nor of how they were placed, although more than thirty urns were represented by the shards, and so we cannot offer a satisfactory explanation for such treatment of the pottery.

Iron Age Pottery.

After the roof of the burial chamber had disappeared and the interior had been partially filled up, judging from the pottery found at the higher level the chamber had been occupied by people of the Iron Age. While the Neolithic floor, following the slope of the site, slanted down from east to west, the Iron Age layer was nearly level, so that while it

[1] *Proc. Soc. Ant. Scot.*, vol. lxviii. p. 339.

was only 6 inches higher than the earlier at the east it was $2\frac{1}{2}$ feet higher at the west or inner end of what originally was the burial chamber.

The fragments of pottery found on this occupational level lay near the inner end of the structure. The edges were crumbly and very few of the pieces could be fitted together. The ware was hard, and contained a considerable quantity of crushed stone mixed with the clay. It was

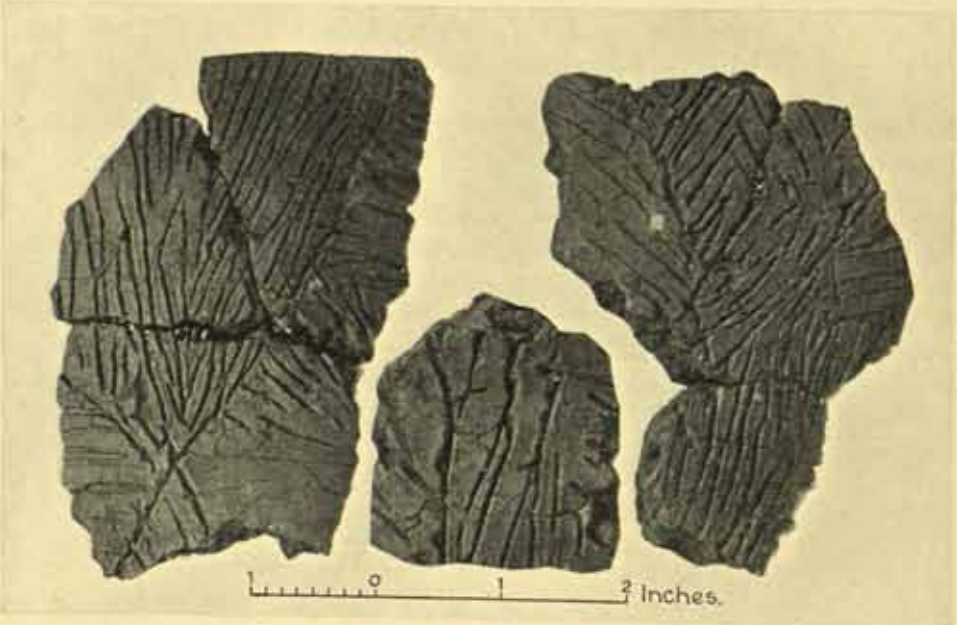


Fig. 19. Iron Age Pottery from Calf of Eday.

black in colour, but owing to the unevenness of the firing the exterior was black, brown, and red in places. There had been only one vessel, which seems to have been bucket-shaped with a straight, sloping wall. From a single surviving rim fragment the mouth appears to have been about 8 inches in diameter. The rim has a gentle downward bevel towards the inside and measures $\frac{3}{8}$ inch in thickness, while the wall is $\frac{1}{16}$ inch more. All the shards are decorated by incised filled triangles and lattice designs, irregularly and carelessly drawn (figs. 19 and 20, No. 1).

Fragments of another vessel, of soft red ware containing a small admixture of broken stones, were found outside the north wall of the cairn, 2 feet under the present surface of the ground, opposite the north-

west corner of the burial chamber. The pieces of pottery are too small to give any indication of the size of the pot, which had a slightly convex

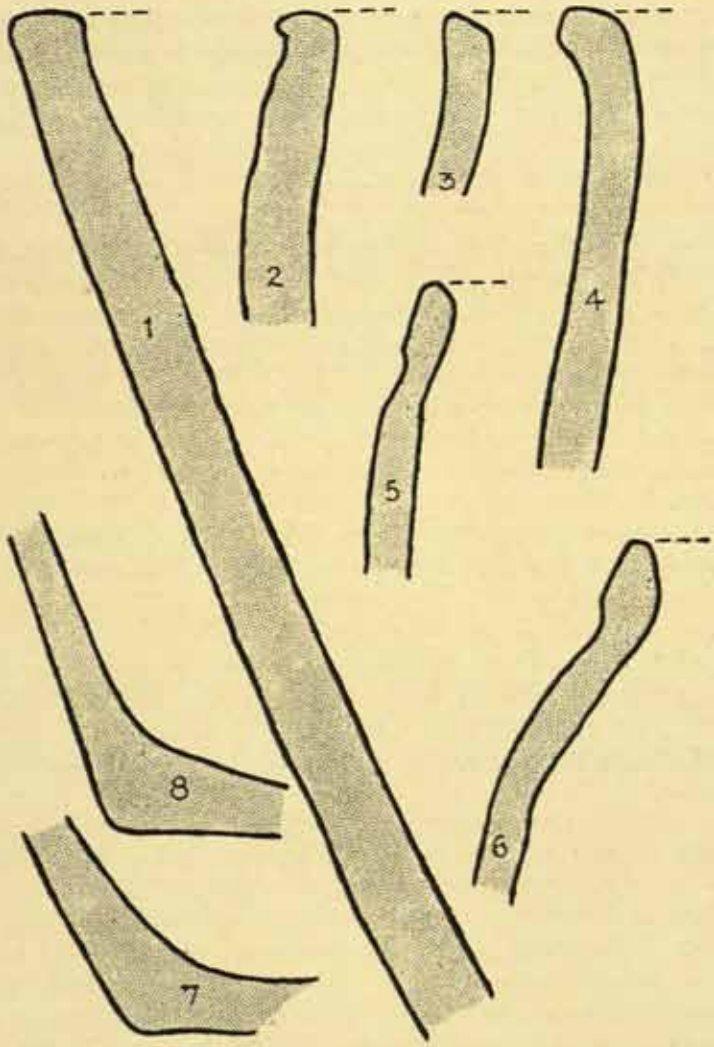


Fig. 20. Sections of Iron Age Pottery from Calf of Eday. (¼.)

wall, ½ inch thick, devoid of ornamentation. Only one very small piece of the rim, which was rounded on the top and projected outwards, was recovered.

The Stalled Cairn—Chamber B.

Iron Age Pottery.

This chamber, though certainly built during Neolithic times, had suffered so much damage later on that no relics, even pottery, of the period were discovered in it. But $3\frac{1}{2}$ lbs. weight of shards were found distributed through a thickness of about 2 feet of fallen stones and soil with which the chamber was filled. Fragments of eight vessels were counted, none of the pieces being ornamented.

The pottery included:—

1. A rim fragment, $4\frac{1}{2}$ inches long and $2\frac{1}{8}$ inches deep, and a few wall pieces of a pot of hard, black, thin ware, which seems to have had a globular body with an upright rim rounded on the top and bevelled on the inside (fig. 20, No. 6). Under the rim is a shallow moulding. The mouth has been 6 inches in diameter, and the wall is $\frac{1}{4}$ inch thick.
2. Two small rim fragments of another vessel, which seems to have been almost similar in shape and texture to the last (fig. 20, No. 5).
3. Rim and wall fragment of fine, hard, black ware with a brown exterior. The rim is flattened on the top and is everted in a fine graceful curve. The mouth has been $7\frac{1}{2}$ inches in diameter and the wall is $\frac{5}{16}$ inch thick (fig. 20, No. 4).
4. Small rim fragment of good, hard, grey pottery, the lip everted and bevelled on the top, measuring $\frac{1}{4}$ inch thick (fig. 20, No. 3).
5. Small rim fragment of a vessel of light brown, vesicular ware, the brim everted and with a slight roll on the outside (fig. 20, No. 2).
6. Piece of the flat bottom and fragments of the wall amounting to less than a quarter of a globular pot of very fine, hard, brown ware with a black core. The wall is $\frac{1}{4}$ inch thick, and the vessel has been at least 8 inches in diameter internally about the widest part and about 5 inches across the base (fig. 20, No. 8).
7. Small basal fragment of a vessel which resembles the last in form, but which has been smaller. The pottery is hard and black with a brownish exterior (fig. 20, No. 7).
8. A few wall fragments of dark ware with red exterior, measuring $\frac{3}{8}$ inch thick.
9. A double handful of small pieces of very coarse, crumbling ware, which contains a large proportion of crushed stone. Amongst the shards is a small bit of the base of a flat-bottomed vessel.

Potter's Workshop—Mound No. 3.

Iron Age Pottery.

Although the pottery from this structure differs entirely from that found in chamber B of the stalled cairn which has just been described, we have to assign it to the same period, the Iron Age. Most of the shards from chamber B were thin and of good hard texture, while those from Mound No. 3 are coarse and thick, and many contain a much greater amount of crushed stone among the clay. Again the pots have been thoroughly smashed up, and it is very doubtful if a complete section of the wall of a single vessel could be pieced together although there are 42 lbs. weight of fragments. Most of the ware is black, sometimes with the outer surface burnt red, a few pieces are red through and through, and occasionally they are buff-coloured or yellow with or without a black core. The walls seem to have been nearly vertical, and none of them shows any traces of ornamentation. There is nothing to suggest that any of the vessels were other than domestic.

The thickness of the wall fragments varies from $\frac{3}{8}$ inch to $\frac{3}{16}$ inch, and the thickness of the bases from $\frac{3}{4}$ inch to $1\frac{1}{4}$ inch, but few pieces indeed are of the smaller dimensions. Though there are twenty fragments of rims it is impossible to say how many pots are represented. These pieces show such a short length of rim that only in three cases is it possible to ascertain the probable diameter of the mouth; these three fragments seem to have come from vessels measuring $5\frac{1}{2}$ inches, 7 inches, and $8\frac{1}{2}$ inches. Basal fragments of at least ten pots, all flat, measuring from a shade less than 3 inches to $5\frac{1}{2}$ inches in diameter can be counted. As we have not been able to correlate any of them with any rim pieces we cannot venture any suggestion as to the height of the vessels. In some the wall has curved in nicely towards the base, but in others it curves slightly outwards forming a splayed foot. Figs. 21 and 23, Nos. 1 to 4, show the form and thickness of some of the rims and bases.

A fragment of the splayed base of a pot of coarse ware, with a wall $\frac{1}{2}$ inch thick and a basal diameter of nearly 5 inches, seems to be part of a "waster." The clay is burnt very red all through, and among the broken stone which has been added to it is a piece measuring $\frac{7}{8}$ inch by $\frac{1}{2}$ inch by $\frac{1}{4}$ inch, the largest that I have ever seen in a Scottish prehistoric pottery vessel.

Although at the first glance this seems a most disappointing collection of broken dishes, some of the pieces demonstrate very clearly how several of them were fashioned, and the general appearance of the shards requires some explanation.

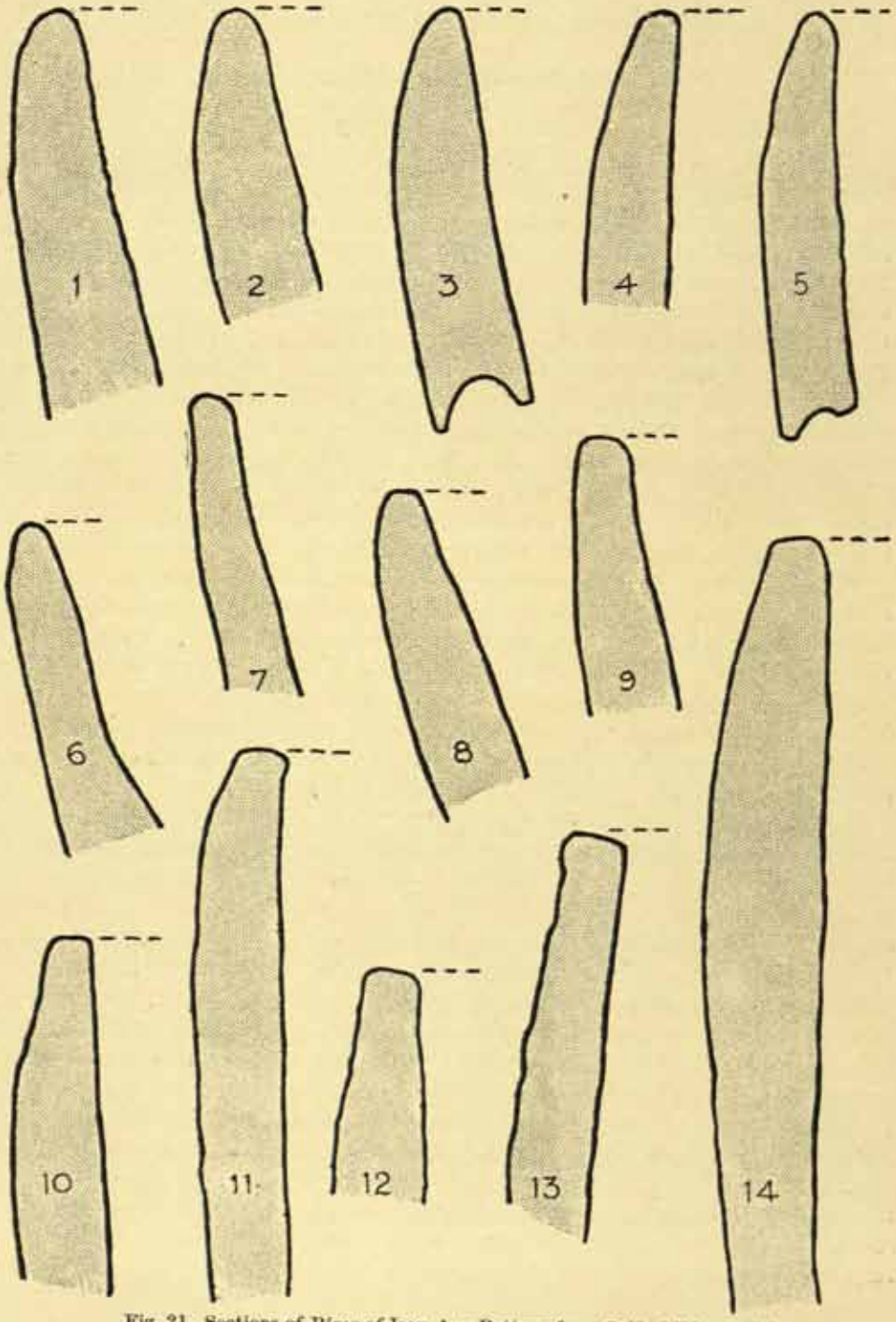


Fig. 21. Sections of Rims of Iron Age Pottery from Calf of Eday. (¼.)

In making the sepulchral and domestic vessels of the Stone, Bronze, and Early Iron Ages in Scotland, generally it was the practice to work up the clay from the base to the lip so that the wall was homogeneous, just as it is in wheel-turned pottery. But, as I have already pointed out in our *Proceedings*, vol. lxiv. p. 195, fig. 2, another method was occasionally employed both in the Bronze and Iron Ages. The clay was formed

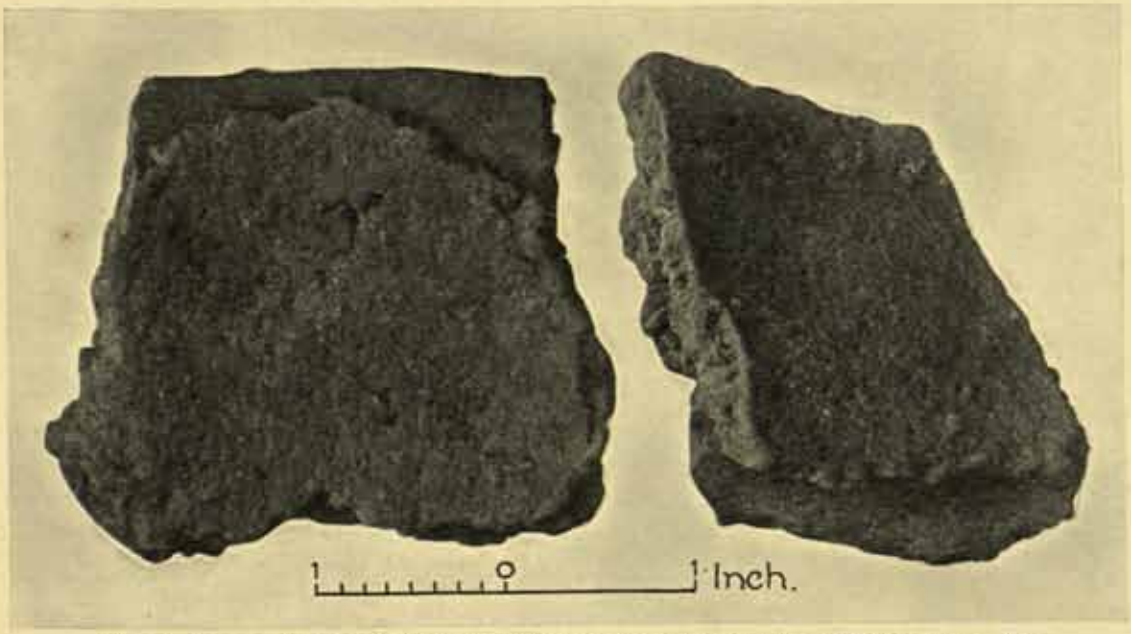


Fig. 22. Iron Age Pottery, showing method of building up the vessel, from Calf of Eday. (¼.)

into strips or bands and these were superimposed edgewise on one another. The upper edge was squeezed into wedge-form usually rounded at the apex, and the lower side of the higher strip was pressed on to the arris of the lower so as to form a groove on the under side of the higher. The clay was then worked down on both the inside and outside of the pot so as to form an overlap on both sides. This naturally made a weak joint, and when pots got fractured they often broke at this part. Three of the Eday pots have been built up in this way, and the strips of clay, measuring from the apex above to the bottom of the hollow below, are $1\frac{7}{8}$ inch, $2\frac{1}{8}$ inches, and $2\frac{1}{4}$ inches in breadth (fig. 21, Nos. 3 and 5, fig. 22, and fig. 23, Nos. 4 to 9). Some pieces must have been broader. In a food-vessel from Kilspindie, East Lothian, which measured $3\frac{1}{4}$ inches in height, there were two strips above the basal one, so they must

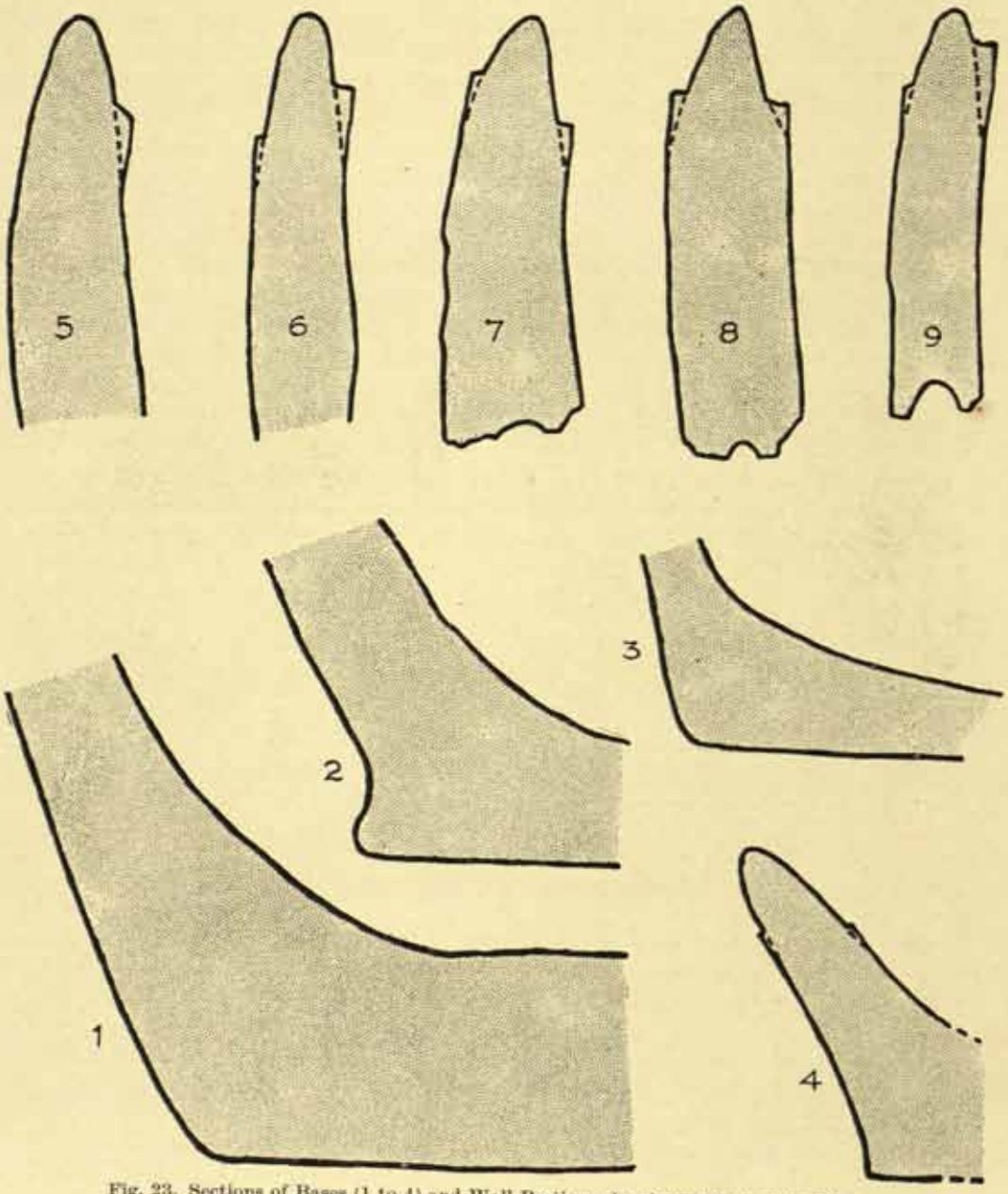


Fig. 23. Sections of Bases (1 to 4) and Wall Portions showing method of building up the vessels (4 to 9), from Calf of Eday. (¼.)

have been less than 1 inch broad. In a cinerary urn from Longniddry, East Lothian, a strip $1\frac{3}{4}$ inch broad was noted. Professor Childe discovered fragments of pots built up in the same way at Skara Brae in Orkney, and Dr A. O. Curle at Jarlshof in Shetland. In all the pieces from the Calf of Eday, and in those from the two East Lothian sites, the bands of clay had been laid horizontally; but in an Iron Age vessel found in the Bishop's Loch crannog, near Glasgow, they were built up spirally, and the junction between them formed a bevel from the outside to the inside of the pot.

The pottery does not look like a haphazard lot of broken dishes such as would have been in general use in a dwelling of the period, as there are so few fragments of fine, thin-walled vessels. It looks as if the shards retained had been selected because of their thickness and coarseness, and that for a specific purpose. Outside the principal buildings of the broch of Midhowe, in Rousay, what might be called a stone chest was found nearly full of broken pots. These evidently had been specially laid aside, as the sea inlet, the Stanchna Geo, is only 6 yards distant, and we may be sure that it would be utilised as a dump for broken dishes and kitchen-midden refuse. These shards were believed to have been kept for being pounded down to mix with fresh clay when a new batch of pottery was being made (*Proceedings*, vol. lxviii. pp. 483 and 508). Possibly we may have a similar collection at the Calf of Eday, and if this explanation is correct it strengthens Mr Calder's claim that the building was a potter's workshop. The occurrence of a waster among the shards may be considered further evidence in support of this.

I am much indebted to Mr A. J. H. Edwards, Assistant Keeper of the Museum, for assistance in sorting out the pottery.

REPORT ON THE SKELETAL REMAINS.

By Professor Alex. Low, M.A., M.D., F.S.A.Scot.

Among the fragmentary human skeletal remains from the stalled cairn on the Calf of Eday are identified: Lower jaw represented by piece of body of right side and fragment of left ramus; two cervical and two thoracic vertebrae; *of hand*, a scaphoid, piece of third metacarpal, and three middle phalanges of fingers; fragment of head of tibia; *of foot*, an imperfect right talus and a left navicular.

REPORT ON THE ANIMAL BONES.

By MARGERY I. PLATT, M.Sc., Royal Scottish Museum, Edinburgh.

This collection of animal remains found by Mr C. S. T. Calder last summer (1936) in a long stalled cairn on the remote island of the Calf of Eday, Orkney, is extremely interesting, since the relics of domestic animals form an insignificant part of the remains and undomesticated species such as red deer are equally sparse. The condition of the bones is as usual very decayed and fragmentary. A bone implement formed from the metatarsal of an ox is markedly different in texture from the majority of the remains. It is hard, heavy, apparently well impregnated with mineral salts, and suggests that it was originally derived from a different locality than the bones in the cairn itself. Throughout all parts of the excavation the bones give evidence of the use of fire. The various species are recorded below with reference to that part of the structure from which they are taken.

Neolithic.—Associated with the human bones occurring at the original neolithic level are the fragmentary remains of an otter (*Lutra lutra*) including the left ramus of a lower jaw; parts of the skull (a fragmentary parietal and three teeth); a lumbar vertebra and the remnant of a thoracic vertebra; and an incomplete right femur.

Iron Age, Chamber A.

Shell-layer, 1st Compartment.—A few small fragments of an ox (breed indeterminable) and a horned sheep occur here. Although from the title it is evident that shells probably of many kinds were present only those of winkles (*Littorina littorea*) were sent to me. Remains of birds were very plentiful. At least five cormorants (*Phalacrocorax c. carbo*) are represented, and although most parts of the skeleton are included, leg and wing bones are the best preserved, and from these some idea of the number of birds present have been calculated. One cormorant was especially large, the others of average adult size. The coracoid of a sea- or white-tailed eagle (*Haliæetus a. albicilla*) also occurs.

From small Slab Construction, 1st Compartment.—Here is included a single mammalian remain—the fragmentary jaw-bone of an ox. The remainder are all bird bones, excluding innumerable fish bones of minute size which were present in the soil and refuse, and in all probability represent the stomach contents of the birds. The relics indicate the

presence of two cormorants (*Phalacrocorax c. carbo*) and a shag (*Phalacrocorax a. aristotelis*).

Shell-layer, 2nd Compartment.—Two fragments of mammalian bone occur, probably of bovine nature, and the remains of three cormorants.

Shell-layer, 3rd Compartment.—A few remains of sheep, mostly immature, and an ox bone occur here. There was also included a limpet shell (*Patella vulgaris*), probably one of the many comprising the shell layer. Bird remains are again most numerous. At least eight cormorants (*Phalacrocorax c. carbo*) were present, a greater black-headed gull (*Larus marinus*), a herring gull (*Larus a. argentatus*), and a shag (*Phalacrocorax a. aristotelis*).

Shell-layer, 4th Compartment.—In this section the hard ox-bone implement occurs. A few other bovine remains are present, together with the molar tooth of a sheep, and a small long bone (probably fœtal) of the same species. There are the relics of six cormorants (*Phalacrocorax c. carbo*), two of very large size, and four medium-sized adults.

Chamber B.

In this section a number of sheep remains all from young animals, including small horn cores, occur. There is also a terminal phalange and a bone from the sternum of a red deer (*Cervus elaphus*). There is only one avian remain, the wing-bone of a merlin (*Falco columbarius æsalon*). Lastly, several bones from the head of a cod (*Gadus virens*) are present.

Potter's Workshop; from small Pit F.

Here occur again many bones of the cormorant, representing two birds. A few calcined bones of ox and sheep are also evident.

Potter's Workshop; 2 feet 6 inches above Floor.

In addition to a few bovine remains, a single fragment of the metacarpal of a red deer (*Cervus elaphus*) also occurs.

It will be seen from the foregoing that the species of paramount importance occurring in the domestic level of the cairn and the potter's workshop is the cormorant. The remains of twenty-eight birds could be counted and probably there were many more originally. Other birds appear, but not in such great numbers and therefore of minor importance. It is possible in consequence that these primitive islanders were using the flesh of the cormorant as an article of diet, in the same

way that St Kildans and other inhabitants of the Western Islands have been known to subsist comparatively recently on the solan goose as their staple food.

I wish to record my sincere thanks to Mr Calder for kindly forwarding to me the animal bones for identification and report.

III.

EXCAVATION OF TORRS CAVE, KIRKCUDBRIGHT.

By S. V. MORRIS, F.S.A.Scot.

(To be printed at the end of volume.)

MONDAY, *8th February* 1937.

SIR GEORGE MACDONALD, K.C.B., President, in the Chair.

The following reply to the Address sent to His Majesty The King on his Accession to the Throne has been received:—

SCOTTISH OFFICE,
WHITEHALL, S.W.
19th January 1937.

SIR,

I have had the honour to lay before The King the loyal Address of the Society of Antiquaries of Scotland on the occasion of His Majesty's Accession to the Throne, and I have been commanded by The King to convey to you His Majesty's deep appreciation of the sentiments of loyalty and devotion to which it gives expression.

I am, Sir,
Your obedient Servant,
(Sgd.) WALTER E. ELLIOT,
Secretary of State for Scotland.

On the recommendation of the Council, R. W. ANDERSON, Whitestone Knowe, Peebles, was elected a Corresponding Member.

A Ballot having been taken, the following were elected Fellows:—

Lieut.-Colonel ALAN M. DUNCAN, T.D., 33 Fotheringay Road, Glasgow, S. 1.
ALEXANDER GRAY, M.A., LL.B., 37 Silverton Avenue, Dumbarton.
T. T. PATERSON, Trinity College, Cambridge.

The following Donations to the Museum were intimated, and thanks voted to the Donors:—

(1) By R. STUART BRUCE, Symbister, Whalsay, Shetland.

Object of Bronze like a hold-fast, measuring $2\frac{1}{4}$ inches long, from Whalsay.

(2) By WILLIAM WHITE, F.S.A.Scot.

Iron Leister for spearing salmon, with four barbed prongs, from the Borders.

(3) By Miss HUME, 150 Rose Street Lane, Edinburgh.

Wooden Luggie, the staves feathered and hooped with withies, containing peas in the hollow bottom, and measuring $3\frac{1}{8}$ inches in height and $4\frac{7}{8}$ inches in diameter at the mouth, from Edinburgh.

Two old Telescopes (1) with wooden tube, measuring $10\frac{1}{2}$ inches in length, (2) with ivory tube, measuring $5\frac{3}{4}$ inches in length.

Crude Candle Holder of tinned iron, used in the illumination of Edinburgh during the visit of George IV.

(4) By DUGALD MACMILLAN, Postmaster, Eriskay.

Perforated Stone Adze, measuring 4 inches by $2\frac{3}{16}$ inches by $1\frac{1}{8}$ inch, from Eriskay, Outer Hebrides.

The following Donations to the Library were intimated and thanks voted to the Donors:—

(1) By THE BRITISH BOARD OF FILM CENSORS.

The History of Carlisle House, Soho, London.

(2) By Professor GERHARD BERSU, *Hon.* F.S.A.Scot., the Author.

Rössener Wohnhäuser vom Goldberg, OA. Neresheim, Württemberg, Reprint from *Germania*, 20. Heft 4. October 1936.

(3) By W. HENDERSON, M.A., F.S.A.Scot.

Catalogue of Collections in the Picture Galleries and Museum of the Smith Institute, Stirling. Third Edition. Stirling, 1934.

(4) By Miss V. C. C. COLLUM, F.S.A.Scot., the Author.

"Race-nations" as Biological Entities. Reprint from *Zeitschrift für Rassenkunde*, 1936. Band iv., Heft 3.

(5) By DUNCAN MCNAUGHTON, M.A., F.S.A.Scot., the Compiler.

Index to the *Transactions of the Stirling Natural History and Archæological Society*. Vols, i. to lvii.

(6) By GILBERT H. ASKEW, F.S.A.Scot., the Author.

The Northumbrian Pipers Society's Tune Book. Newcastle-on-Tyne, 1936.

(7) By Professor J. DE LANCEY FERGUSON, M.A., Ph.D., F.S.A.Scot., the Author.

Some new Burns Letters. Reprint from *P.M.L.A.*, vol. li., December 1936. No. 4. New York, 1936.

The following Purchases for the Library were intimated:—

Index to The Palace of Minos. By Joan Evans, D.Litt. With special sections classified in detail and chronologically arranged. By Sir Arthur Evans. London, 1936.

The Early Maps of Scotland. By a Committee of the Royal Scottish Geographical Society. Second Edition. Revised, Edinburgh, 1936.

The following Communications were read:—

I.

THE DRAGONESQUE FIGURE IN MAESHOWE, ORKNEY.

By W. Mackay Mackenzie, M.A., D.Litt., F.S.A.Scot.

Nowadays there is a very proper prejudice against the inscribing by visitors of their names or sentiments upon ancient monuments. Becoming as this restriction may be, archæologists at least have reason to be glad that it did not prevail at an earlier age. It adds to the interest of the great chambered tumulus of Maeshowe that there should be found on the inner face of its walls no fewer than twenty-four separate Runic inscriptions by Norse intruders of the twelfth century A.D. Half the inscriptions give little more than individual names; two record that Crusaders, "Jerusalem-farers," had broken into the howe; and two celebrate the beauty of certain ladies.[1]

The Crusaders in question have been taken to be those who, after passing in Orkney the winter of 1150–51, sailed with Earl Rognvald to the Holy Land; but we know also that two years later (1152–53) Earl Harald and his company sheltered and caroused here at "Yule";[2] and others probably from time to time made their way to the place—all, however, it is indicated by the language and the lettering, within the same twelfth century. But one traveller outdid his fellows by incising on the face of an upright slab the figure of a mythical monster, usually referred to as a dragon (fig. 1), a vigorous and delicately executed drawing, no more than 3¼ inches high by 2½ inches broad, but the work of an accomplished artist.

The inscriptions have received their meed of attention, but, apart from manifold reproductions, little or no account has been made of the dragon. In Farrar's volume of facsimiles of the inscriptions (1862), Prof. Rafn is quoted to the effect that "there is a similar one on a stone at Hunstead in Scania"—the district in the extreme south of Sweden. That stone has since been lost.[3] Dr Joseph Anderson repeated this reference, adding that the dragon was "similar in style to that on the tomb of King Gorm the Old at Jellinge in Denmark," further as "bearing also some resemblance to one sculptured on the Runic stone dug up

[1] On the complete set see Prof. Bruce Dickins in *Proceedings of the Orkney Antiquarian Society*, vol. viii. (1929–30) pp. 27–30.

[2] *Orkneyinga Saga*, c. 101; Anderson's edition, chapter xci.

[3] Brøndsted, *Early English Ornament*, p. 285.

in St Paul's Churchyard, London." [1] These will come up for consideration in the course of what follows. But for a detailed discussion of the figure we must go to what appeared in the *Proceedings of the Orkney Antiquarian Society* for 1932–33 from the pen of Mr J. Storer Clouston, who has done so much admirable work on the history of the islands.

According to him the animal "is really modelled on the conventional

Fig. 1. The Maeshowe "dragon" (from Farrar's *Maeshowe*).

lion of the period; as one can see very well from the lions on the borders of the Bayeux Tapestry, where the same beast in the same attitude —raised forepaw, head looking backwards, and tail between the legs, emerging over (though not through) the back appears again and again." Not, he continues, "that our Maeshowe beast is actually intended for a lion. . . . He is in fact simply an amphibious monster (partly a sea beast as shown by the scales), given the general form of a conventional lion because that was the artistic type in fashion at the time, familiar to the draughtsman."

But for the idea of the animal, its form, and "attitude," we need not

[1] Edition of *Orkneyinga Saga* (1873), p. cv; *cf.* here pp. 164, 167.

turn aside to the Bayeux Tapestry—so called—which is usually dated about the end of the eleventh century. We shall find that both the model and its elements are of much greater age and wider significance. In particular the "head looking backwards" is already a feature of sixth-century art; its beginning is as old as that of the head looking forwards.[1]

Attention is next drawn to what is certainly a startling feature of the dragon as here shown. "His tail," it is pointed out, "passes between his legs and reappears *through* his back, to end at last in a maze of leafy flourishes. This strange fancy of the artist," continues Mr Clouston, "is very exceptional—if not unique, and," he says, "it has seemed to others before me that the tail has surely been made into a weapon which is transfixing the monster." The weapon he suggests is a sword, since "the flourishes have the general form of the hilt and guards of a sword handle." A further suggestion is that the apparently otherwise "meaningless leafy flourishes may make a play upon some word for a sword or a hilt," so that, "looking to the wide-spread knowledge of this hero and his legendary story, and to the howe associations of the sword Leaf," Mr Clouston feels "strongly inclined to interpret the leafy flourishes as an allusion to the name of that famed blade of Bodvar Bjarki." It seems to him clear that "this idea of converting the tail into a sword was an afterthought," since "the line of the back crosses the blade, and thus was obviously cut before the fancy occurred to the artist. It was evidently an addition and embellishment to the beast and fish motive." The fish alluded to is what "the scaly, formidable monster" is "purposely grasping in its mouth." There are further developments of these propositions in an historic and heraldic direction, but these it is not necessary to consider.

This analysis makes no account of Prof. Rafn's remark that there was a similar figure on a Swedish stone, or the comparisons of Dr Anderson. And, indeed, it would be strange if, even in Orkney, a skilled draughtsman should produce a design unrelated to contemporary northern art, or at least related no more closely than in setting out to depict an "amphibious monster" in lion's clothing and clearly not succeeding.

What we have to realise is that all northern art from the days of the "great invasions" down to its submergence by the Romanesque school —a period of some five hundred years—was in essence zoomorphic—

[1] "Gehen wir nun über zu der Gruppe mit nach hinten gedrehtem Kopf. Diese Gruppe hat in der Germanischen Thierornamentik ebenso alte Ahnen, wie die vorige" ("We now pass to the group with the head turned to the back. This group has in German animal-ornament an ancestry as ancient as the former," *i.e.* the group with head looking forwards.), *Der Allgermanische Thierornamentik*, Bernhard Salin, p. 237. See also pp. 214, 247.

that is, based upon animal forms fancifully treated and strongly stylised,[1] the only variations and combinations being ribbon patterns and interlacements.[2] Not till the latest stages did plant ornament find a place. The technique of this northern art oscillated, so to speak, between representation in relief and in flat linear designs, the latter being, here as in Ireland, the more spontaneous, purely native manner.[3] From this characteristic and a close study of details the Swedish archæologist, Bernhard Salin, was able to mark off three great periods or styles prior to the opening of the Viking Age.[4] Style I. shows little animals, birds, fishes, and even human figures modelled in relief, and covers the late fifth and the sixth century, the age of the invasions, whence it has been named by Brögger the North Sea Style,[5] having its fullest development in the three Scandinavian countries and in England. The origin of the motifs in this style, like that of each succeeding phase, has been the subject of much controversy—whether it is to be found in the industrial arts of the late Roman Empire of the west or in elements transmitted from Scythian ornament in southern Russia. The issue here and in subsequent cases it is not necessary, for our purpose, to discuss.

With the appearance of Style II., starting from the seventh century, comes a complete transformation. All subjects except the animal disappear, though the bird returns at a later date, and the treatment is no more in relief but flat and linear.[6] In the first stage the bodies of the animals are composed into interlacements, no fewer than six, and even more, being in particular cases combined to form a single design. These general features are continued into the eighth century, but now in a freer, less geometric form. Fantasy, according to Salin, is the special mark of this later epoch,[7] when, however, as he says, animal-ornament in the north reached its highest pitch in elegance and refinement.[8]

On a review of the whole material, however, it is clear that, apart from minor details of execution and feeling, Style III. is but a

[1] *Préhistoire de la Norvège*, Haakon Shetelig, p. 235; *Early English Ornament*, J. Brøndsted, p. 161.

[2] "The favourite decoration of the Northmen was an intricate arrangement of animal-forms, knots, and worm-twists," *A History of the Vikings*, T. D. Kendrick, p. 28.

[3] Interesting in this connection is the following comment from a recently published book (1935): "The whole tradition of English painting is linear and not plastic. The English love of line has continually asserted itself, despite the imposition of plastic standards from the Continent," *A Background to Chinese Painting*, Soame Jenyns, p. 129.

[4] *Die Altgermanische Thierornamentik.*

[5] Shetelig, *Préhistoire de la Norvège*, pp. 237–38, citing A. W. Brögger, *Histoire de l'art Norvégien*, p. 52.

[6] Salin, *Die Altgermanische Thierornamentik*, p. 214; Shetelig, as cited, p. 241.

[7] As cited, p. 274.

[8] *Ibid.*, pp. 270–71.

prolongation of Style II., and Shetelig has therefore included both in his Vendel Style, so named from the typical examples found in the boat-burials at Vendel in North Uppland, Sweden, the two stages being distinguished as Early and Late.[1] And there is this further distinction, that Late Vendel is peculiar to the Scandinavian countries, while the preceding styles are common to the whole Teutonic area.[2]

The interlacing animal ornament thus classed as Vendel has been associated with the interlaced work ultimately derived from Byzantium, but then common in western Europe.[3] It covers the seventh and eighth centuries, but extends into the ninth, when it becomes old-fashioned, and towards the close of which it has ceased to be a living style, though certain of its elements continue in later work. A notable example is the carving of Late Vendel character on the bow and stern of the ship (fig. 2) unearthed at Oseberg,[4] on the Vestfold side of the Oslo fjord, in 1904, which, with its richly decorated accompaniments, formed the tomb of Queen Asa, who died about 850, and was grandmother of the great Harald Harfagri. This, with some other things, is the production of a conservative artist, whom Shetelig calls "the Academist,"[5] carrying on the traditional Vendel art in the flat rhythmical pattern or chain of interlocking animal shapes. It is important to note that the Oseberg collection provides excellent specimens of artistry in wood, all earlier examples surviving only on metal objects.

Fig. 2. Late Vendel decoration on Oseberg Ship.

We have now passed into the Viking Age, which may be taken to begin just before A.D. 800, and find this period of stirring activity and contact with lands south, east, and west reflected in a recurrence of plastic art, as in the period of the folk-wandering of the fifth and sixth centuries. Accordingly this departure also is illustrated in the Oseberg

[1] *Préhistoire, etc.*, p. 243. [2] Brøndsted, as cited, p. 163. [3] Shetelig, as cited, p. 242.
[4] See *Osebergfundet*, III., planches i, ii, iii.
[5] *Saga-Book of the Viking Society*, vol. x. part 1 (1928), pp. 19, 21; Brøndsted, p. 173.

material in the somewhat clumsy modelling of figures on certain articles. It is common in the round and oval brooches of the time. Its character

Fig. 3. Viking Brooch found in Barra. Degenerate "Gripping Beast" style.

is that of animal heads seen from above and stumpy rounded bodies with limbs grasping each other or their strapwork frames, whence its Swedish name of the "Gripping Beast" Style, while, because of its inferred origin in the lion ornament of the Carolingian Empire, it is known to Danish-Norwegian archæologists as the style of the "Carolingian Beast." [1] We

[1] Shetelig, *Préhistoire, etc.*, pp. 246–47, and *Saga-Book*, as cited, pp. 29–30; Brøndsted, p. 162 ff.

see it in a much weakened, and therefore late, form in a brooch in the British Museum (fig. 3) from the island of Barra.[1] This brooch may be attributed to the late ninth or early tenth century, by which time the "Gripping Beast" was no longer a living force.[2]

But while these fashions were being worked out the traditional art-motif was being revived in a new animal figure not modelled but once more drawn as a flat body in outline with interlacements. This was the "Jellinge Beast," so called because of its appearance on articles found in the royal barrows at Jellinge, near Veile, in Jutland. On this ground the style can be dated to A.D. 930–40,[3] but Brøndsted identifies it with the animal found on bronze mounts from the burials at Borre, north of Oseberg in Norway,[4] which are of the second half of the preceding century. There is also a difference of opinion as to its origin,

Fig. 4. "Jellinge"-style animal. Detail of harness-trapping from Mammen, Denmark.

whether it has developed independently or is a borrow from Ireland, where the Vikings had formed the Kingdom of Dublin. It is agreed, however, that it has been profoundly influenced by Irish details, such as double contour lines, joint-spirals, and lappets on the head.[5] Another important novelty is a plant-ornament, now seen in this field for the first time, which has been traced to the acanthus and is apparently a contribution from Carolingian, that is, ultimately, classical art.[6] This "Jellinge Beast" is an imaginary, purely ornamental, ribbon-shaped creature, which can be found also on the stones of northern England, to which it had been brought in the time of the Norse-Danish Kingdom of York, A.D. 867–948. An example on a harness-mount from Mammen, Denmark (fig. 4), shows its general characteristics, its shape resembling an elongated dachshund (fig. 4). It can thus be recognised on a broken slab at Levisham, Yorkshire[7] (fig. 5). It was from northern England, indeed, that the Scandinavian folk learned to ornament the stone monuments to their dead. As a further instance of the mutual culture-influences of the two peoples, it may be mentioned that in 942 Odo,

[1] See *Proc. Soc. Ant. Scot.*, vol. xlviii. (1913–14) p. 309.
[2] Brøndsted, p. 185. [3] *Ibid.*, pp. 162, 270. [4] *Ibid.*, p. 179.
[5] Shetelig, *Préhistoire, etc.*, p. 251; Brøndsted, p. 238; Reginald Smith in *Archæologia*, vol. xxiv. (1923–24) p. 252.
[6] Brøndsted, pp. 275–76; Shetelig, as cited, pp. 251–52.
[7] Brøndsted, p. 202; Collingwood, *Northumbrian Crosses*, p. 18.

a pure Dane, was made Archbishop of Canterbury. The Viking invaders must be credited with other interests than mere plunder and conquest.

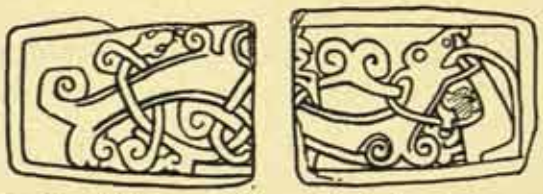


Fig. 5. Levisham Slab (from Collingwood's *Northumbrian Crosses, etc.*).

The fact of the fundamental place occupied by animal ornament in northern art, and various other details noted in connection with it, all have a bearing upon the Maeshowe figure. But no configuration so far

Fig. 6. Stone of Harald Gormsson, "Bluetooth."

encountered will serve as a model. Now, however, with dramatic suddenness we are confronted, again at Jellinge, with a new animal, different in feeling from all that have gone before, vigorous and aggressive, carved upon a gravestone (fig. 6). This ornamented stone, a lengthy inscription

informs us, was erected by King Harald Gormsson—familiarly known as Harald Bluetooth—to the memory of his father and mother. He had continued their work of consolidating the Danish Kingdom, and the inscription credits him with having conquered "all Denmark and Norway," the runes shown on this face giving ALA ("All"), after Denmark, with the other two words AUK NURUIAK ("and Norway"). Harald reigned from A.D. 940 to 986, and the date of the monument is taken to be about 980.[1]

But though placed in the immediate vicinity of the earlier burial-mounds which have yielded examples of the ribbon-shaped, highly conventionalised "Jellinge-Beast," it is clear that in this creature we have to do with a different conception, a creature not indeed zoologically recognisable, yet built up on naturalistic lines, free and life-like in action. It has therefore been differentiated as the "Great Beast," and derived by Brøndsted from the "Anglian Beast" of late Northumbrian monuments, a conclusion in which Mr Collingwood believes he is right,[2] and which is accepted by Reginald Smith.[3]

Nevertheless the "Great Beast" does continue certain characteristics of the "Jellinge Beast" proper—the double contour lines, joint spirals, and the crest or lappet on the head, all accounted for above. The tongue protrudes from the open jaws and the forepaw is raised, but these two are ancient features. On the neck is the suggestion of a mane, which may point to the Carolingian lion as the prototype. Round neck, body, and tail twists a band, recalling the old favourite ribbon ornament, and here, too, as so often in the case of the ribbon, terminating in a snake head, apparently a device to liven things up. The most prominent feature, however, is the foliaceous finish of lappet and tail.

On the source of this plant element, new to northern art, there is diversity of opinion. Shetelig finds its model in contemporary English leaf ornament with, in time, an infusion of "palmette" leaves from the East, silver objects in Arab style having been found both in Sweden and Norway.[4] On the other hand, Brøndsted sees it as based on the acanthus, which Dr Sophus Müller had already identified in the preceding Jellinge Style, the narrow curled leaf being taken as the outcome of a highly conventionalised treatment.[5] By the beginning of the

[1] V. Wimmer, *De danske Runemindesmærker*, vol. i. pp. 28–29; *cf.* Reginald Smith in *Proc. Soc. Ant. London*, 2nd Series, vol. xxiii. (1909–11) p. 401.

[2] *Year Book of the Viking Society*, 1931, p. 15; *cf.* also T. D. Kendrick, *A History of the Vikings*, p. 30.

[3] *Archæologia*, vol. lxxiv. (1923–24) p. 252.

[4] *Préhistoire, etc.*, pp. 251, 252–53; *cf.* Reginald Smith, as cited.

[5] Brøndsted, pp. 275, 293.

eleventh century this plant ornament has developed independently of any associated animal in what is known as the "Ringerike Style," so called from its appearance on runestones of reddish sandstone quarried

Fig. 7. Ringerike ornament, Vang, Norway.

at Ringerike, a district of Norway immediately north-west of Oslo (fig. 7). Here we have the slim curling leaf bristling around the edges of the design, features which Brøndsted claims have been borrowed from the MS. illuminations of the Winchester School in southern England, in which the whole drawing is an application of the Continental acanthus (fig. 8). This school came into existence early in the second half of the tenth century, and from 1014 to 1042 England, with Winchester as its

capital, formed part of the great northern kingdom of Sveind (Sweyn) Forkbeard and his son Knut (Canute). The latter, it may be observed, was a patron of culture and favoured England more than Denmark, to which he sent Englishmen both as bishops and as royal officers. Many instances of the Ringerike Style have been found in England,[1] but more significant in the present connection is its occurrence on the runestone from St Paul's Churchyard, London, now in the Guildhall

Fig. 8. Corner-piece of "Winchester" illumination. Gospel-book, Cambridge (after Brøndsted).

Fig. 9. London Stone.

Museum (fig. 9), which from the runes is dated by Wimmer to about 1030.[2]

In this creature we have joint-spirals but not the double outlines. The place of the raised foreleg is taken by a whimsical piece of ornament terminating in an animal head. The head of the animal itself is reverted, and the tongue protrudes between two opposed fangs. But the head lappet, the ribbon-like tail, even the clawed feet—every possible extension in fact is prolonged into the curling palmette of the Ringerike Style; a playing with the subject rather than a coherent design. A less confused example comes from Tullstorp, in the south of Sweden, a district rich in these runestones (fig. 10). Here we have the usual

[1] Brøndsted, pp. 293–95; Reginald Smith in *Proc. Soc. Ant. London*, vol. xxvi. (1913–14) p. 68. According to Reginald Smith, however, following Shetelig, it originated elsewhere and "took root here."

[2] *De danske Runemindesmærker*, vol. iii. p. 91.

features, but the head-lappet looks like an exaggerated ear, while the termination of the tail resembles the serrated acanthus leaf folded.

The runic inscription has the interest of containing the word KUML, so familiar in Shetland for a tumulus or cairn. Wimmer gives its Danish equivalent as *Mindesmaerke*, "memorial." The whole inscription reads: KLIBIR AUK ASA RISTHU KUML THUSI UFTIR ULF; giving the usual formula: "Klibir and Åsa raised this memorial to Wulf." In this case the persons concerned cannot be identified,[1] but from the runes and the Christian crosses the stone can be attributed to the eleventh century.

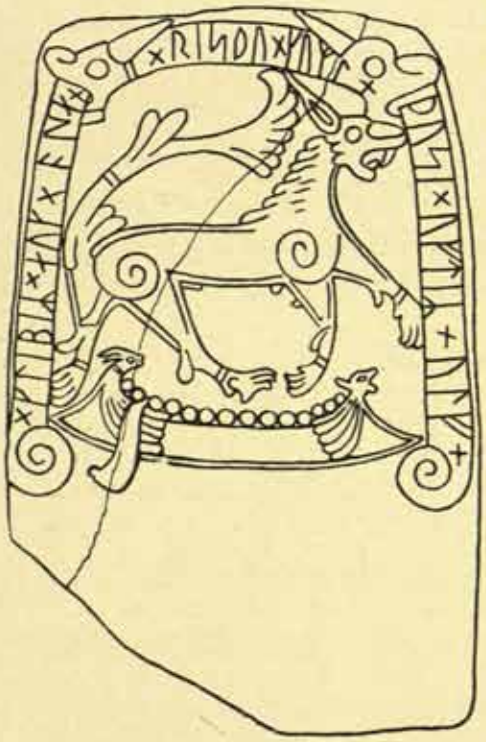


Fig. 10. Tullstorp Stone.

It can now be claimed that we are directly on the trail of the Maeshowe monster. Indeed, the lost stone at Hunnestad in south Sweden, which Prof. Rafn noted as having on it a figure resembling that at Maeshowe, is said to have been "quite like" the one just illustrated from Tullstorp.[2] But examples of this single dominating "Great Beast" are numerous throughout the eleventh century in the three Scandinavian countries,[3] not only on stone but also on wood and metal. And it is on one of a small class of relics in metal that we find the closest, as it is also the most skilfully executed, approximation to the Maeshowe beast.

These relics are the weather-vanes, of which the example shown (fig. 11) came from Heggen in Norway, and is now in the University's Museum of Antiquities at Oslo.[4] It consists of a richly gilded plate of copper or bronze of triangular shape, with the longest side made in a convex curve. The straight sides are framed in plates bent over thin iron rods, but in this case the mounting has been at some time broken off the curved side and replaced by a narrower plain strip of bronze

[1] Wimmer, as cited, iii. p. 91.
[2] *Ibid.*, pp. 284, 289.
[3] Brøndsted, p. 285.
[4] *Acta Archæologica*, vol. ii. (1931), Copenhagen, p. 162.

or copper laths, riveted to the plate and encroaching slightly upon the design. Of these vanes, all of similar construction, four have been discovered in Norway, one on the mainland of Sweden, and one on the island of Gothland, while the edge-mounting of another was dug up when work was being done on the foundations of Winchester Cathedral, giving, like the London stone already described, an almost certain link with the empire of Canute. In that case its date would fall somewhere

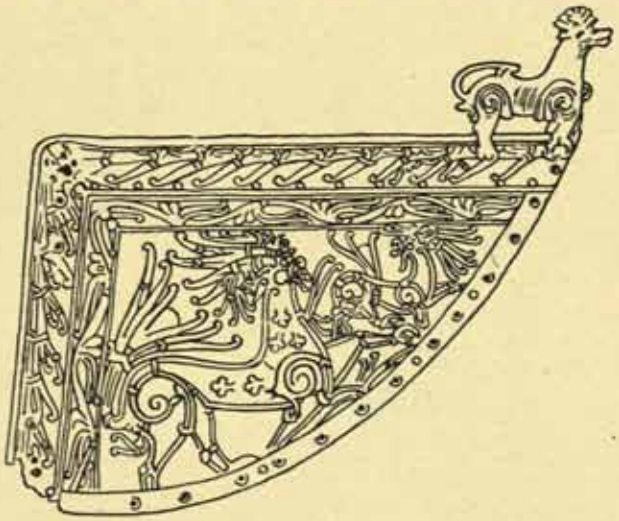


Fig. 11. Weather-vane, Heggen.

within the first third of the eleventh century; about the year 1000 has been suggested.[1]

Four of the vanes once hung on church spires, while the remaining two, including that from Heggen, can be inferred also to have come from churches.[2] Whether this was their original destination, however, is open to doubt. If the Heggen example and the one from Sweden are to be dated about A.D. 1000, then they are earlier than the introduction of Christianity to these quarters. The dating, of course, may be too early, but, even so, there does not seem to be any independent evidence that vanes existed on Scandinavian churches in the eleventh century.[3] This limitation, however, would not apply to an example which is assumed to have been "made in the second half of the 13th century, but on models nearer to the first half of that century or its middle."[4] At the same time there are other details which seem to

[1] *Acta Archæologica*, vol. ii. (1931), Copenhagen, p. 165.
[2] *Ibid.*, pp. 162, 181.
[3] *Ibid.*, pp. 181–82.
[4] *Ibid.*, p. 172.

indicate a prior use for the vanes—it is suggested on ships, whence they might be transferred to the buildings, just as the dragon heads on the prows were imitated on the churches of wood.[1]

On this particular issue all we need note here is the range in time covered by the vanes, extending from the beginning of the eleventh to the second half of the thirteenth century. This inquiry is confined to the character of the ornamentation, which has been "etched in by means of a graver working zigzag fashion,"[2] is in delicate lines and "sometimes quite minute."[3] The designs differ, one having what is very probably a Christian subject, while another is executed in open work. But our special interest is in the subject of the Heggen example.

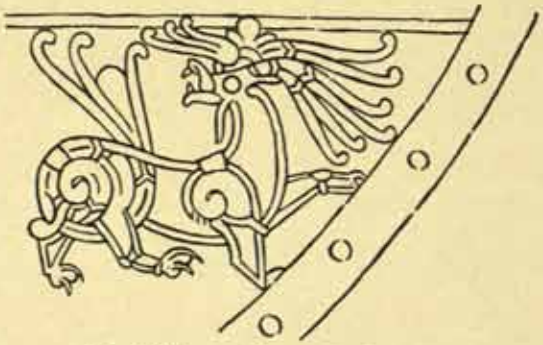


Fig. 12. Heggen Vane. Smaller beast enlarged.

On one side we have a following pair of the Great Beasts with their appendages of palmettes, representing acanthus (as is held), on head and tail, and used as an independent adornment on the two original margins. The animals have the double outlines and exaggerated joint-spirals, while the larger one shows on its body a trefoil ornament, which can be claimed to be a Carolingian detail. It is the smaller beast, however, to which I invite closer attention (fig. 12). All the leading features have already been noted in previous cases, including the reverted head, the projecting tongue, and the raised forepaw. What I would emphasise is the treatment of the tail, which is not carried, as in other examples, over the back but between the hind legs and then upwards through the body, as it were, crossing the lower lines but emerging behind those of the back. Thus we have here a parallel to the most startling detail of the Maeshowe beast, except in so far as the places of entry and emer-

[1] *Acta Archæologica*, vol. ii. (1931), Copenhagen, p. 182.
[2] *Ibid.*, p. 159.
[3] *Ibid.*, p. 178.

gence, as it were, are reversed. But we see that this odd departure at Maeshowe is not something "unique," calling for a correspondingly unique explanation, but purely a piece of artistic variation, a fantasy of design, appealing to craftsmen far remote in time and space, to a Norseman graving on metal in Norway in the early eleventh century, and to another incising on stone in Orkney a hundred years later.[1] Nor are the "flourishes" in which the tail ends "meaningless" in any relevant sense; they are the foliaceous ornament of which we have seen examples,

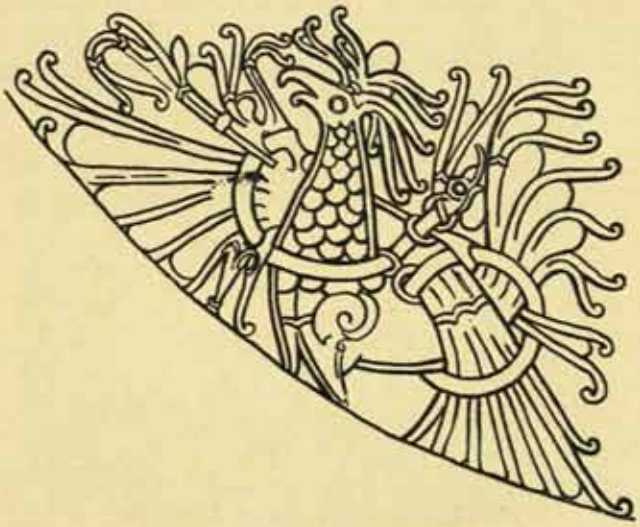


Fig. 13. Heggen Vane; other side.

with, on the Maeshowe figure, perhaps more of the acanthus in feeling. What has been spoken of as a fish in the mouth is, as already observed, the tongue.

One other detail remains for notice, the pattern of scales which have been interpreted as indicating "an amphibious monster (partly a sea beast . . .)," but which also are plainly no more than an artistic embellishment, since we find the same filling-in a feature of the figure on the other side of the Heggen vane (fig. 13). This is an even more fantastically handled version of the Great Beast motif, bird-like in character, and apparently influenced by the favourite peacock of Byzantine and Carolingian art. It is almost lost in the abundance of palmette-like foliage, the greater part of which has been left out of the drawing

[1] Mr Kendrick (see p. 160, n.) has been good enough to express his agreement: "I have no doubt that the Maeshowe figure belongs, as you say, to the early mediæval art represented by the Scandinavian weather-vanes."

in order to show up the creature more clearly. On the band encircling the neck, with a head and cresting that can scarcely be called serpentine, are the loose circles or "ring-knots" characteristic of and carried on from tenth-century art in Scandinavia, northern England, and the Isle of Man. A similar ring on a large scale passes through the body below, a freakish device comparable to the penetration of the tail in the beast on the other side and at Maeshowe.

The range of the scale ornament also can be extended. It is to be seen on a Carolingian silver cup of the early ninth century discovered

Fig. 14. Silver Cup from Ribe (from Brønsted's *Early English Ornament*).

at Ribe in south-west Jutland,[1] and now in the National Museum at Copenhagen (fig. 14). Its origin is possibly to be found in the feather treatment on a bird, as shown on a Carolingian ivory in the Vatican Museum at Rome [2] (fig. 15). A similar decoration appears on South Frankish sarcophagi,[3] as also on some of our twelfth-century coped stones or "hog-backs," though in these cases it is generally held to represent roof tiles. But clearly the scale pattern carries no "amphibian" suggestion.

From this investigation emerges the important fact that the Maeshowe figure is no capricious product of a stray artist, but a significant example of northern decoration in its final phase before it is supplanted by the

[1] Brøndsted, pp. 329–30.
[2] Illustration from *Antiquity*, March 1936, p. 64, plate vi., A.
[3] Brøndsted, p. 329, note 2.

Romanesque art of the south. Fundamentally it is still Scandinavian, clinging to the age-old animal subject in a familiar pose and preserving several of the traditional details, including the foliage ornament that first appeared with the Jellinge animal. The double outline has disappeared, as also the joint-spiral, though, as Dr Brøndsted has emphasised

Fig. 15. Carolingian Ivory, Vatican Museum.

in a personal letter, its place on the foreleg has been taken by an "acanthus" decoration. Instead of head-lappets we have ears, and the eye is not circular, as in all the figures already shown, but ovoid, a form, however, which appears in the Late Vendel Style [1] at least. The figure as a whole has received, within its convention, a more realistic handling.

Romanesque influence, in fact, has made its impress, a conclusion with which Brøndsted has expressed agreement, and which at the time of execution was to be expected. The Maeshowe dragon illustrates the last dying gesture of native northern art.

I have to thank Mr C. T. S. Calder for his kindness in preparing some of the drawings.

[1] Salin, as cited, p. 272.

II.

LATE-GLACIAL AND EARLY POST-GLACIAL SCOTLAND. By W. J. McCALLIEN, D.Sc., F.R.S.E., Glasgow University.

I. Introduction.

It is unnecessary for the writer to emphasise the interdependence of the two sciences, Geology and Prehistory. It is well known that the geologist is dependent on the archæologist for the interpretation of the fossils, be they human remains or implements, found in our superficial deposits, and that geological methods are constantly used by the archæologist. Nevertheless, in spite of the fact that everybody realises that this interdependence theoretically exists, it is remarkable how seldom there is any marked co-operation between the workers in these two fields. This is perhaps particularly so in Scotland.

The remains of our early ancestors come within the sphere of geology in the same way as the study of the fossil remains of ancient plants and animals is part of the everyday task of the geologist. Geology is concerned with the history of the earth, of its fauna and flora. The geologist does not think of stopping his researches at any time before the present day. He is just as active watching the action of man, or of the sea, or of the rivers of to-day, as he is in unravelling the history of a thousand million years ago when our oldest rocks were being formed.

The geologist arranges the events of the past history of the earth in a chronological sequence beginning with the oldest and finishing with the youngest. The largest of the units into which geological time is divided are called *eras*, and these in turn are divided into *periods*, and the periods into *epochs*.

In this paper we shall be concerned with the history of Scotland during the Quaternary Period, the youngest of the subdivisions of the record, and the shortest. Because of the opinion which man has of his own importance the Quaternary is often spoken of as the Age of Man, thereby giving it more or less the rank of an era and comparing it in magnitude with the great eras of geological time. We know, however, that, geologically speaking, the Quaternary was very short and that man actually lived in the preceding Pliocene epoch.

The Quaternary Period is further subdivided into the Recent and

Pleistocene epochs. The latter is the epoch of the Great Ice Age. In its turn it is again subdivided into a great many stages of human culture, mostly by the joint work of the archæologist and the geologist. Here we shall consider Pleistocene and Palæolithic as synonymous. The geologist as a rule thinks in terms of the Pleistocene and the archæologist in terms of the Palæolithic. The geologist often uses both terms, Palæolithic usually referring to the older Quaternary history of the unglaciated parts of our country, whereas the same time in glaciated regions is thought of as the Pleistocene.

Pre-Palæolithic time is undoubtedly the province of the geologist, and in the study of more recent times the archæologist may succeed without geological advice. Nevertheless, so much archæological research has been carried out in post-Palæolithic studies, both in Scotland and in Ireland, with results which are entirely at variance with geological observations, that it seems necessary for the archæologist and the geologist to work together when studying deposits up to, and perhaps including, the Neolithic.

From what has just been written, therefore, it will be clear that, in the writer's opinion at least, the archæologist who tries to interpret the Palæolithic history of Scotland without the collaboration of the geologist will be making a much less profitable contribution to scientific knowledge than is deserved by the amount of work and thought put into his research.

To take a case in point, it has been written in a discussion of the question of the Assynt Caves that, "It will no doubt be asked when the last ice period terminated in this country. *The question is purely a geological one*, but it may be taken that the final melting of the ice occurred many thousands of years ago." (The italics are my own.) In the same note, however, the theory is put forward that the caves were occupied by Palæolithic man, without any geological evidence whatever in its favour.

We have no intention of referring to the great number of references which have been made in non-scientific publications to the occurrence of Palæolithic man in Scotland, but it must be pointed out that in *Nature* (19th September 1936) Mann claimed to have found "a number of rolled stone implements of types similar to those of the palæolithic cultures of England and France" in "the glacial clays and derived gravels" of Shetland. If these deposits do contain implements they should certainly be studied by a group of geologists and archæologists. So far no glacial deposit in this country has yielded human implements and it is highly improbable that the Shetland finds are artifacts.

The glacial history of Ireland is rather similar to that of Scotland, and in recent years a great deal has been written about Palæolithic man in that country, particularly in Sligo and Waterford.

It was in 1927 that Burchell announced the discovery of supposed Palæolithic implements in Sligo, and in the following years about forty papers on the subject appeared in various scientific journals. A careful study[1] by Professors Macalister and Charlesworth of all the sites which were supposed to have yielded implements suggested that what was considered to be an old sea cave in one locality (Coney Island) is in reality a very recent product of the marine erosion which is still so actively in progress on that coast. Actually, the cliff-face has been cut away since the middle of the nineteenth century, for, as Macalister and Charlesworth have shown, the concrete foundation of a building now overhangs the cliff.

The recent age of the other sites is also undoubted, and the supposed implements were demonstrated to have been formed by marine erosion within the last hundred years.

Recent studies in south-east Ireland in the cave which yielded the remains of the Kilgreany man have shown that the human remains are in all probability of comparatively recent date, although the cave did contain a Pleistocene fauna.

In the present paper we shall consider what the geologist has to say about Scotland and neighbouring countries during the Pleistocene or Palæolithic epoch. The Palæolithic history of northern Britain is closely linked with the events of southern Britain at a time when this country was connected with the Continent across the present Straits of Dover and southern portion of the North Sea.

II. Pre-Palæolithic Scotland.

The history of the time immediately preceding the Palæolithic in Scotland is rather difficult to interpret. The evidence which has survived the passage of the great ice-sheets consists for the most part of the drowned valleys or fiords of western Scotland, the buried channels of pre-existing rivers in certain parts of the Midland Valley, and the coast-line of the sea in pre-glacial times. We cannot speak with any degree of precision of the ages of these features. We conclude that they came into being before the Ice Age and also that the fiords and buried river channels are earlier than the pre-glacial beaches.

An examination of the condition of the country at this time is

[1] *Proc. Roy. Irish Acad.*, vol. xxxix. (1929–31).

extremely important, as it has a close bearing on the possibility of pre-glacial life surviving the Ice Age.

The buried valleys mentioned above differ from the sea lochs in that they are filled with sands and gravels. These sands and gravels are archæologically of the first importance, but we shall not pursue the subject further at this stage as it will be discussed later in another connection. Here we are concerned with the fact that they indicate that at some time shortly before the Ice Age sea-level stood about 300 feet lower than it does now.

Then followed a period, also pre-glacial in age, when the sea stood some 170 feet higher than it does now. The existence of this sea is proved by the presence of well-marked raised-beach platforms in some of our western islands—such as Mull, Colonsay, and Oransay—and in parts of the mainland. Pre-glacial platforms occur at other heights: 135 feet (Colonsay); 100–160 feet (Mull); 140 feet (Ardnamurchan); 100 feet (Islay); 75 feet (Stonehaven); 60 feet (Outer Hebrides); 25 feet (Iona).

The existence of these beaches round our western islands and along different parts of our mainland indicates that immediately before the arrival of the great ice-sheets of the Pleistocene, Scotland was very much as it is to-day. It obviously did not form part of a high continent, as many have said to try and account for the Ice Age.

The raised-beach platforms which we have just been considering must not be confused with the post-glacial beaches which also fringe our coast. That they came into existence before the Ice Age is shown by the fact that their surfaces are striated and moulded by the passage of the ice, and by the fact that they are sometimes covered by boulder clay.

III. The Pleistocene.

Strange as it may seem, considering the recent age of the deposits with which we are now dealing, there is no general agreement as to where the line should be drawn between the Pleistocene and the preceding Pliocene. It may seem even stranger that it is found to be equally difficult to point to the boundary between the Pleistocene and post-glacial or recent times.

Indeed, any line between the Pleistocene and recent time must necessarily be arbitrary, for there is no actual break in the continuity of the geological history of Scotland. The evidence which is available appears to point to a more or less regular passage from the Pleistocene to the present. Glacial conditions lingered on in Scotland subsequent

to their final disappearance in England. It is obvious, therefore, that to apply the term "*post-glacial*" to deposits overlying the glacial beds in England is misleading unless the deposits can be shown to be contemporaneous with post-glacial deposits in Scotland. Many of the deposits of "post-glacial" age in England are older than any Scottish post-glacial deposits, and will actually be contemporaneous with some of our glacial beds.

The term *post-glacial* is used in this work for the time subsequent to the District Glaciation of Scotland, to be described later. Among the deposits which, according to this definition, are post-glacial are (1) moraines belonging to late stages in the glaciation of the high ground; (2) raised beaches; (3) freshwater alluvium; and (4) peat.

IV. The Ice Age Arrives.

A study of the fauna of the Pliocene indicates that the climate was becoming increasingly colder.

With the beginning of the Pleistocene both fauna and flora became definitely Arctic, and the Glacial Period of intense cold arrived. During this Ice Age most of the British Isles was under ice. It is fortunate, however, that the southern margin of the great ice cap did not reach as far south as the English Channel. As a result we now find in the south of England the remains of the fauna of the ice-free region. In the north are the records of glaciation in the form of glacial deposits and glacial moulding and markings. It is for us to try and correlate the deposits of these two entirely different regions. This is the great problem of the Pleistocene.

The standard of comparison for Pleistocene deposits is the record of the Thames Valley, which was entirely ice-free. There the complete record of the Pleistocene is preserved in the gravels of the river terraces and in the steps between the terraces. Many fossils and implements found in caves and fissures in other parts of the country have been correlated with their equivalents in the Thames Valley.

Without going into details of the Thames succession, which is at present undergoing active revision by Mr Lacaille, we may recall that there are here three main terraces. Of these the oldest (Boyn Hill Terrace) contains derived Chellean (Abbevillian), earlier Clactonian, earlier Acheulian, and Clactonian, Acheulian, and Early Levalloisian artifacts in the older and newer parts. The fossil mammals of the terrace include the warm climate animals: *Elephas antiquus*, *Rhinoceros megarhinus*, *Bos*, hippopotamus, lion, deer, horse, dog, etc. The Middle

or Taplow Terrace contains Levalloisian implements. Such newcomers as *E. primigenius* (mammoth), *R. tichorinus* (woolly rhinoceros), and the musk ox put in an appearance at this stage. The Low Terrace (youngest) contains an abundant Arctic fauna and flora. In addition to the newcomers mentioned in the Middle Terrace the reindeer and elk now occur.

From the above we may safely conclude as our starting-point for further correlations that the glaciation of northern parts of Britain was heralded in the south by the arrival of the cold-living species of mammal in Late Middle Terrace and Low Terrace times. Further, in the gravels of the Low Terrace at Ponder's End there occurs an Arctic peat bed, containing Arctic mosses, Arctic birch, and Arctic willows, which is dated very late in the Palæolithic. Recently, however, King and Oakley have suggested that the Ponder's End stage is somewhat older and that it was connected with a Mousterian glaciation.

V. The Maximum Glaciation.

The advent of the Pleistocene glaciation from the gradually cooling conditions of the preceding Pliocene was naturally first felt in the Highlands of Scotland. Glaciers developed in the mountains north of the Midland Valley and crept out on all sides until they coalesced in an immense ice-sheet covering the whole of Scotland and extending out into the sea.

It was probably not long after the first accumulation of snow in the Highlands sent its glaciers below the snow-line that other powerful centres of dispersal were initiated, in the Southern Uplands for example, and in the English and Welsh mountains.

It is not our purpose here to consider the movement of this vast ice-sheet in detail. Suffice it to say that the ice from all the centres flowed as far south as a line joining the Thames and the Severn. This limit is shown in fig. 1, where it separates the closely dotted southern part of England from the openly dotted portion. After a long halt at this position the ice melted northward with amelioration of climate.

The Older Drift.—There is now general agreement among geologists that the drifts which cover the southern part of the English glaciated region, in the Midlands, and in East Anglia, are older than the drifts of northern England, of most of Ireland, and of Scotland.

The area now covered at the surface by this Older Drift, as it is called, is that between the lines of the two ice-margins in fig. 1. For our present purpose it will suffice to say that there are several glaciations

represented by the deposit which is given the general name of *Older Drift*. We shall refer soon to these different glaciations.

With the northward retreat of the ice-margins from the southern limit of the Older Drift, Palæolithic man and his mammalian companions also moved north. How far they went in this direction and

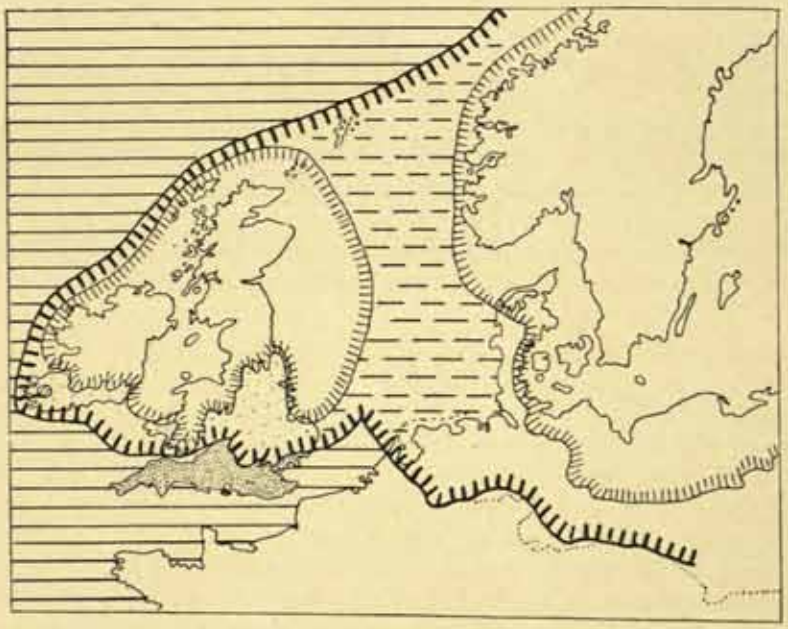


Fig. 1. Sketch-map showing the limits of the Older Drift (heavy ornament) and Newer Drift (lighter ornament) Glaciations. The heavily dotted area in England south of the Older Drift was unglaciated and the sparsely dotted areas are covered by Older Drift. (After Charlesworth.)

how far the ice retreated is a question of the greatest importance to Scottish geologists and archæologists.

The Newer Drift.—The next record in the glacial history of Britain is of a readvance of the great ice-sheet southward until its margin coincided with the limit shown by the thinner line in fig. 1. The material deposited by this readvance forms the *Newer Drift* and it occupies the region to the north of the Older Drift.

The "Standard" Succession in South-East England.—With this brief outline of the glacial history up to this point before us we may now glance at the course of events which occurred in south-east England. This is necessary for the proper understanding of what we may expect later in Scotland if we are to arrive at a true correlation of our glacial

stages and the different human cultures. It is from the study of south-east England that we shall learn the age of the Scottish glacial invasions.

The following tabular summary indicates the ages and sequence of glacial and interglacial deposits of the Suffolk and Norfolk region of south-east England:—[1]

12. Newer Drift	Upper Palæolithic.
11. Hillwashes.	
10. Morston Raised Beach.	
9. Brick-earths.	
8. Upper Chalky Drift . .	Levalloisian.
7. Brick-earth.	
6. Gravels with mammoth.	
5. Brick-earth and river gravels.	
4. Chalky-Jurassic Drift . .	? Early Middle Acheulian and Clactonian 11.
3. Glacial sands and gravels.	
2. Norwich Brick-earth (North Sea Drift).	? Chellean.
1. Cromer Forest-bed . .	Early Chellean (Abbevillian).

There is good reason to believe that in the above table there are four glacial episodes. Starting with the youngest at the top these are:

12. Newer Drift (Hunstanton Brown Drift).
8. Upper Chalky Drift.
4. Chalky-Jurassic Drift.
2. Norwich Brick-earth.

Since Scotland was entirely covered by the ice-sheet responsible for the formation of the Newer Drift (Magdalenian) it will be sufficient for us to consider in more detail the question of how its age is determined. This has a very important bearing on the problem of the age of certain archæological finds.

The Early Magdalenian Age of the Newer Drift is proved by several lines of argument. In what follows we shall be following closely in the trail blazed by Professor Charlesworth of Belfast.[2]

(1) In the Cae Gwyn caves Aurignacian implements occur beneath the Newer Drift. These caves occur in the Vale of Clwyd in North

[1] Prof. P. G. H. Boswell, *Proc. Prehistoric Society*, July–December, New Series, vol. ii. part 2 1936), p. 149. See also the same author in *Proc. Geol. Assoc.*, vol. xlii. part 2 (1931), p. 87, and Pres. Add., Section C, British Assoc., York meeting.

[2] For example, in *Quart. Jour. Geol. Soc.*, vol. lxxxv. (1929) p. 335.

Wales, 400 feet above sea-level, and in them bones of Pleistocene animals were found with a flint of Middle Aurignacian Age. The cave-deposits are overlain by the Newer Drift, which must, therefore, be younger than Middle Aurignacian.

(2) A few feet away in the Ffynnon Beuno caves (380 feet) a fine proto-Solutrean point and a Middle Aurignacian graver were found with Pleistocene bones. These in turn were overlain by Newer Drift.

(3) The Creswell caves occur in the Lower Permian Limestone in north-east Derbyshire in the area covered by the Older Drift and some distance south of the Newer Drift. Two of the caves yielded Upper Palæolithic implements, and Pleistocene animals were found in another (Mother Grundy's Parlour). Mousterian implements of quartzite and Upper Palæolithic flints with a number of Solutrean and proto-Solutrean inplements were also found. In Mother Grundy's Parlour there are Azilian or Azilio-Tardenoisian tools, and a Magdalenian javelin head occurs in the Pin Hole Cave side by side with Late Palæolithic flints.

Here, therefore, in caves *outside* the Newer Drift we find a sequence found nowhere within the Newer Drift region, a sequence from Aurignacian to Azilio-Tardenoisian.

(4) The sequence in the Thames Valley to which we have previously referred culminates in the cold fauna and flora of Early Magdalenian Age at Ponder's End. The cold period seems undoubtedly to be the equivalent of the Newer Drift glaciation.

(5) Implements regarded as Mousterian by the finder, Mr J. Reid Moir, have been recovered from the Chalky Boulder Clay of East Anglia. This discovery necessarily implies a Late Palæolithic Age for the Newer Drift, since the latter is younger than the Chalky Boulder Clay.

(6) Further, the same investigator has more recently discovered implements claimed as Upper Palæolithie in the Newer Drift of the Hunstanton cliffs.

(7) The same condition of affairs holds on the Continent, for no Magdalenian relics have been found north of the moraines (Warthe and Brandenburg) which bound the Newer Drift in Germany.

We have now given evidence to show that several ice-sheets spread from Scotland into England. The glacial history of north-east Scotland indicates that this part was overrun by three ice-sheets, and considering the great changes both in the direction of the ice-flow and in the positions of the ice-sheds during these different phases it seems very likely that extensive deglaciation took place between the different advances of the ice. Unfortunately up to the present we have not been able to

correlate these interglacial periods with those in the south, but interglacial beds have been found, and the plants contained in them indicate a period of mild climate.

VI. The Aurignacian Oscillation.

It has been shown above that the ice-sheet responsible for the formation of the Newer Drift was of Early Magdalenian Age. There can be little doubt that when the ice-margin in England reached the line of the moraine shown in fig. 1 the ice completely covered the whole of Scotland and extended a considerable distance into the present coastal seas.

Pleistocene animals of earlier date than the Newer Drift occur within this line in the caves opened earlier or embedded in the drift itself. There is evidence, therefore, that the Magdalenian ice-sheet was preceded by an interglacial period. According to Professor Charlesworth this is the Aurignacian oscillation of Continental writers. In the region now covered by the Newer Drift, Reid Moir has discovered a land-surface yielding artifacts of Middle Aurignacian facies, comprising burins, scrapers, points, and cores. It was during this period that the Morston raised beach was formed.

The question for us to consider next is how far north the ice-margin retreated during this oscillation. In North Wales Aurignacian man occupied the Cae Gwyn and Ffynnon Beuno caves, and quartzite implements of Chellean type are claimed to have been found beneath the Newer Drift in Durham.

In the Victoria Cave, 140 feet above sea-level not far from Settle, Yorkshire, in the area of the Newer Drift, there are three principal horizons:

3. Upper cave-earth with a mixed fauna.
2. Thick stiff grey clay, sometimes laminated.
1. Lower cave-earth containing a rather warm fauna including *E. antiquus*, *R. leptorhinus*, *Hippopotamus*, and *Bos primigenius*.

Horizon 3 contains two layers:

3*b*. Romano-British.
3*a*. Neolithic.

Of these, 3*a* contained a harpoon and kit of implements of Azilian type, but Breuil also recognised cylindrical rods of reindeer antler which he assigned to the Magdalenian (between Middle and Upper Magdalenian). They were probably derived from the lower cave-earth, and according

to Miss Garrod "they probably represent the most northerly range of the Magdalenian hunters."

The remains of the Scottish representatives of Palæolithic animals are very scanty but of great importance. They consist, as is well known, of the mammoth (*E. primigenius*), the woolly rhinoceros (*R. tichorinus*), and the reindeer (*Rangifer tarandus*). Some would add the primitive ox, the horse, and the red deer to this list, but the evidence for the occurrence of these is far from convincing.

The first Palæolithic fossil bed is that at Kilmaurs, near Kilmarnock, containing the remains of mammoth and reindeer. Professor Gregory and Dr Currie were of opinion that the Kilmaurs bed was of Mousterian date and contemporary with the Chalky Boulder Clay of England. A Scottish interglacial bed cannot very well be contemporary with an English glacial period. The same authors continue their correlations thus: "To the Mousterian Age may also be ascribed the sands forming the 170-foot terrace along the Kelvin Valley at Hungryside sand pit near Cadder to the west of Kirkintilloch, which yielded, from a bed of 50 ft. of sand, the bone of a woolly rhinoceros." This question of the age of these sands is of vital importance and will be discussed later. The great mistake made by Professor Gregory and Dr Currie is that they considered the age of the sands to be given by the fossil rhinoceros, whereas the latter must have been picked up from an older horizon.

As has been stated by Professor Ritchie, the woolly rhinoceros probably belonged to the mammoth-reindeer fauna. Ritchie considers that this indicates a period corresponding to the Low Terrace of the Thames Valley, and therefore post-Mousterian. "The known ingredients of the first Scottish glacial fauna, then, compel us," he says, "to place it in the Würm ice period of the Continental workers, and the subsequent appearance of a major glaciation further suggests that it belonged to the opening of that period, and was succeeded by a glacial advance which marks the height of the Würm development. In archæological chronology the first Scottish glacial fauna may be said to belong to Upper Palæolithic times, at the close of the Mousterian culture period, and to precede the glacial advance, the retreat of which is associated in Central Europe with Aurignacian culture."

From what has been said it will be realised that during an interglacial period the ice-front retreated from the southern limit of the Older Drift at least up to the Midland Valley of Scotland. Had Palæolithic man followed the mammals northward during this oscillation his remains would now be found in positions similar to those in which the remains of these animals were found, *i.e.* for the most part

under boulder clay or in caves which had been opened during this period. So far neither his bones nor his implements have been found in Scotland, and it is possible that he did not follow the retreating ice-margin.

According to Professor Boswell the following is a summary of the conditions at the border regions of glaciated and unglaciated Britain.

Early man passed through his apprenticeship as an implement maker in the periods of increasing cold preceding the first glacial episode. During the first interglacial Chellean (Abbevillian) man advanced into such parts of the British area as were available to him, and although few unabraded Chellean (Abbevillian) artifacts are found, derived and abraded implements occur in later deposits. Over the greater part of England the second glacial episode was that of the maximum glaciation, and Chellean (Abbevillian) and perhaps Early Acheulian man, both users mainly of core-tools, retreated before it. With amelioration of climate the second interglacial period followed. The remains of early man are most satisfactory during this period. Acheulian man (both Middle and Upper) hunted the straight-tusked elephant, the hippopotamus, and the leptorhine rhinoceros. With the arrival of colder conditions again, man producing flake implements principally appeared. The northern part of England was now under ice. After the formation of the Cromer moraine and the Chalky Boulder Clay the ice retreated on a large scale, as we have already pointed out, and Aurignacian man was able to penetrate the now ice-free country as far north as Derbyshire and North Wales, where he was accompanied by Arctic and Tundra animals. Although there were later readvances of the ice, eastern and southern England were open for continuous colonisation from the time of the fourth glaciation onward.

VII. Later Stages in the Ice Age.

The ice, after its advance to the line of the Newer Drift (Early Magdalenian) shown in fig. 1, retreated northward again as it had done previously. It can be imagined that a considerable interval of time must have elapsed after the Early Magdalenian ice-sheet had begun to melt and before Scotland was free from its mantle of white. If that had been the final withdrawal of the ice from our country, post-glacial human and faunal remains in Scotland would of necessity be post-Early Magdalenian and most likely post-Palæolithic.

However, Scotland has still the records of a long glacial history after the retreat of the above ice-sheet, even after the retreat of the ice-sheet north of the English border. Firstly, the Magdalenian ice-sheet retreated

as far north as the Midland Valley and was followed by another re-advance into England. On this occasion it may only have reached as far as the Lake District, but during the whole of the time the Firth of Clyde and the western seaboard of Scotland were covered by moving confluent glaciers. How far they actually stretched into the coastal waters we do not know, but the Firth of Clyde glacier was sufficiently powerful at this stage to reach across the waters of the North Channel and of the Atlantic between Scotland and Ireland, and push them

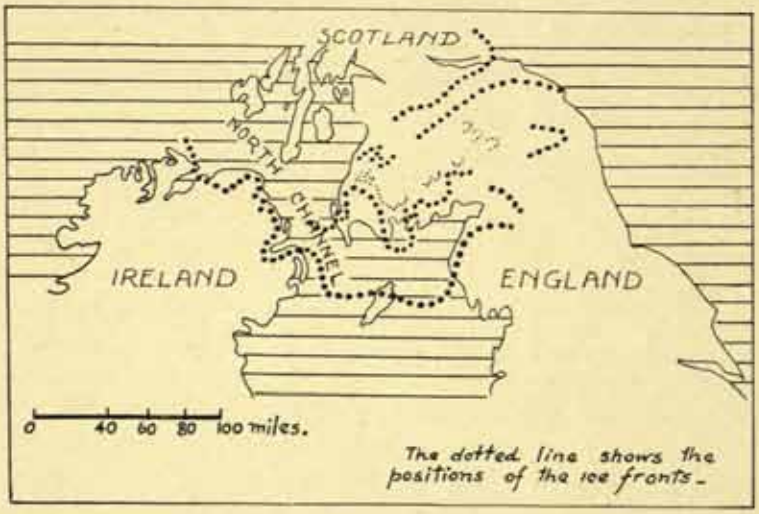


Fig. 2. Sketch-map showing the extensions of the Scottish ice across the North Channel during the readvance about 12,400 years ago. Later readvances during the retreat are also shown. (After Charlesworth.)

westward and southward until the ice came ashore in Donegal and Antrim.

The retreat phenomena from this stage onward have been studied in detail by many geologists, notably by Professor Charlesworth, whose work we have already mentioned. Here we need only say that the readvance of the ice, which we have just been considering, brought the margin forward to Lough Foyle and Belfast and to the Isle of Man and Cumberland.

Again the ice retreated, and at a later date it once more overran the North Channel right to the Antrim coast. At this stage there is evidence that the whole of the Midland Valley was occupied by confluent Highland glaciers. The Southern Uplands formed a local ice-sheet, and their glaciers flowed north and south along the main valleys (fig. 3).

From its limit against the Southern Uplands, and in the Firth of Clyde between Kintyre and Ireland, this relatively late ice-sheet melted out of the Midland Valley and coastal seas. Finally the Highland ice split up into two great glaciers occupying the valleys of the Clyde and Forth.

Without going into any detail we may point out that it was during the retreat of these glaciers that the glacial lake deposits of the Clyde and Midland Valley were formed. The lake sands and gravels in the

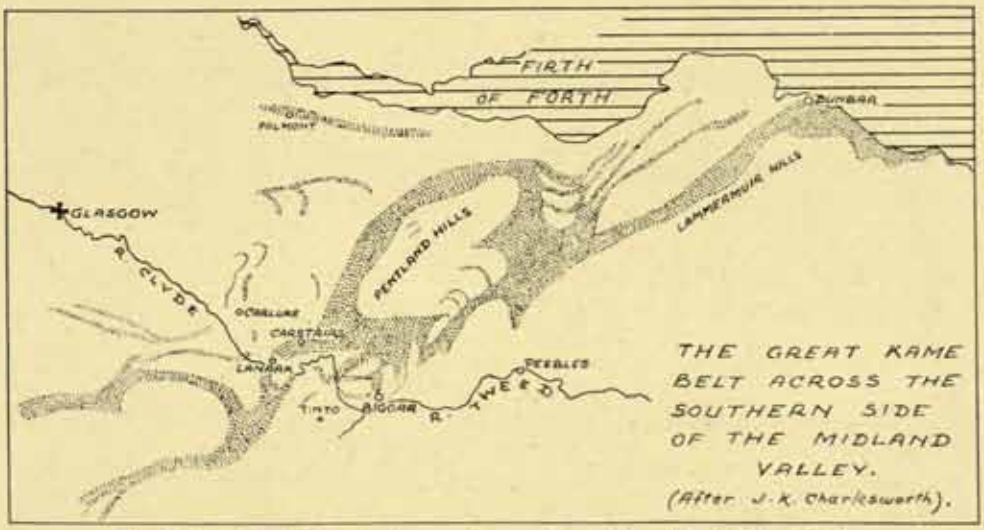


Fig. 3. The Great Kame belt across the southern side of the Midland Valley.

Kelvin Valley which have become famous because of their containing the remains of the woolly rhinoceros were deposited when the Kelvin drainage was prevented from flowing westward. The deposits, therefore, are the products of the last phase of the glacial history of the Midland Valley.

VIII. Late-Glacial History of Scotland.

The above discussion of what may appear as purely geological phenomena has been necessary in order to form a connected picture of the events leading up to the freeing of our country from the great ice-sheets. We now come to what in the writer's opinion is the most vital chapter in the Late-Glacial history of Scotland. It is the period when Scotland was once more opened up to continuous colonisation. During the earlier parts of the period glaciers were still abundant in

many districts and they actually pushed their way right down to the sea-level of the time.

The geological records of the events are preserved in the raised-beach terraces and notches which abound around our coast, and in the moraines and boulder clays which were deposited from the local glaciers. The history of our country during this time is undoubtedly one of great importance. It leads on without a break to the time when

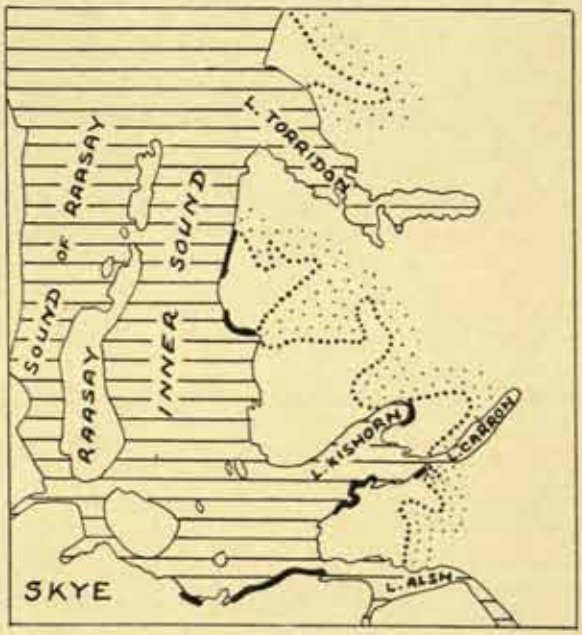


Fig. 4. Map of the mainland of Scotland east of Skye, showing the outer limit of the moraines of the District Glaciation and the relation between these moraines and the 100-foot raised beaches. (After Wright.)

Scotland became inhabited by a scattered population, and from that time onward the record of the human occupation, though interrupted by gaps, is more or less well known and does not offer nearly the same chance for the grave error possible among older cultures.

First of all we shall discuss the higher raised beaches which occur at heights of about 100 feet, 75 feet, and 50 feet above sea-level. The submergence responsible for these was confined to a zone round the Highlands. The 100-foot beach, which is a conspicuous feature on many parts of our coast, is unknown in England and Ireland. In some cases the 100-foot beach is found on the outer parts of the western fiords of Scotland, but is absent from the inner reaches (fig. 4).

In a discussion of the age of these beaches it is necessary to refer to the Late-Glacial history of some parts of western Scotland. Undoubtedly the most interesting district to which to direct attention is the island of Mull, where the researches of Professor E. B. Bailey and Dr W. B. Wright have brought to light many points of primary importance.

In Mull during Late-Glacial times almost every important glen bordered by ground about 1250 feet was occupied by a glacier. The eastern part of Mull is characterised by the absence of Late-Glacial beaches in the hollow connecting Lochs Don, Spelve, Uisg, and Buie. They are completely absent from Glen Forsa and the valley of Loch Ba, although both of these hollows lie below 100 feet.

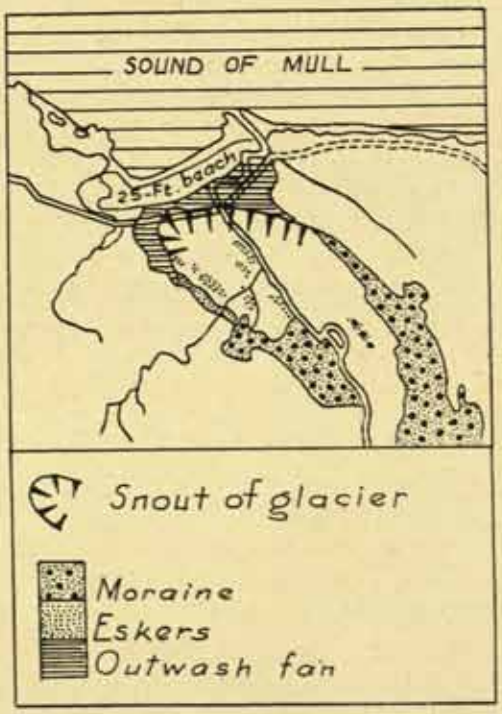


Fig. 5. Sketch-map of the lower part of Glen Forsa, Mull, showing the deposits of the valley glacier, and indicating their relation to the Mesolithic raised beach. The glacier itself is partly reconstructed. (After fig. 66, Mull Memoir, Geol. Surv. Scotland.)

In the case of Loch Ba and Glen Forsa the glacial outwash fans discharged from the glaciers were formed *after* the withdrawal of the sea responsible for the high beaches in other parts of the island—that is, these 100-foot and 75-foot beaches were elevated at the time the glaciers reached the position of the outwash gravels. In the case of these two glens the fans descend gently to about 30 feet, below which height the deposits have been resorted during a very much later period, that of the Mesolithic beach.

It is clear, therefore, that during Late-Glacial times the sea withdrew from the 100-foot level to the 75-foot level, and still further to at least 30 feet above high-water mark, before the glaciers withdrew from the glens.

Even more spectacular than these examples is that furnished by the low ground around Loch Don and Loch Spelve. This low ground during Late-Glacial times was covered by a piedmont glacier which

prevented the sea from covering this ground, and for about a mile the notch of the 75-foot beach has been cut in the outer face of the moraine. The beach is completely absent within the line of the moraine.

That the ice did not keep out these high-level seas all the time, however, is indicated by the fact that shelly muds were first laid down in Loch Spelve and the glacier readvanced across them, and, picking them up, incorporated them among its own deposits.

It is obvious, therefore, from the above remarks that the Late-Glacial chronology is particularly clear. The 100-foot and 75-foot raised beaches are *synchronous* with the Moraine or District Glaciation of the Highlands.

Exactly the same story is told by the glacial history of many of our mainland glens. For example, the 100-foot sea had access to Loch Lomond and the Gareloch during an interstadial period, and during the readvance of the Loch Lomond glacier to the position of the Glen Fruin moraine and of the Gareloch glacier to the Rhu moraine the deposits which it had laid down in the lochs were dredged up and mingled with those of the readvancing glacier. The study of the outwash gravels between Dumbarton and Balloch suggests that the sea had actually left Loch Lomond before the readvance of the ice.

In the east of Scotland, at an earlier period than we have just been considering, sea-level had fallen to about 75 feet at Dunbar and to about 50 feet at St Abbs Head in Late-Glacial times.

The arctic sea of these high-level beaches in Scotland may be correlated with the cold Yoldia Sea of the Baltic region.

IX. Correlations.

Having now reviewed the events of the Pleistocene, and having considered certain broader aspects of the local glaciation, we are in a position to go a little farther afield and attempt correlations with the events in Europe.

This is all the more necessary because it is that aspect of the subject which has appealed most to non-geologists, and it has been done with results which would appear to be at variance with the facts. It is undoubtedly the case that for the archæologist in particular this has always had a peculiar fascination.

The question of the method which has been used for determining the length of time in years during and since the Ice Age has recently been discussed by the writer in *Science Progress*, and need not be referred to further here. A tabular summary, however, of the results arrived at is given (Table I).

TABLE I.—THE LATE-GLACIAL AND EARLY POST-GLACIAL STAGES IN THE BALTIC REGION. THE NUMBERS GIVE THE YEAR BEFORE A.D. 1900. (Based on Daly.)

	Post-Glacial	Littorina Sea
7500		
8700		Ancylus Lake
9700	Finiglacial	
		Yoldia Sea
10,200		
	Scanian	Baltic Ice-Lake
13,700		
	Danish	
?		Covered by ice
	German	
?		Peak of last Glaciation
25,000		

The multiplicity of the glaciations in Britain has been emphasised in the previous pages. As far as Scotland has been treated, five stages in the glacial history have been mentioned. These were, in order of age, beginning with the oldest: the Older Drift glaciation, itself composite; the Newer Drift glaciation; the North-East Antrim-Isle of Man-Cumberland readvance; the Lammermuir-Stranraer-Antrim coast readvance; and the District or Moraine glaciation.

In the Baltic region of Europe there is evidence in what is usually considered as the fourth glaciation of at least three phases—the Daniglacial, the Gotiglacial, and Finiglacial phases. Recently it has been suggested that there are three substages older than the Finiglacial (Bothnian). These have been called the German, Danish, and Scanian

substages, beginning with the oldest. The multiplicity of the earlier stages of the Continental glaciation is also firmly established.

It was in the year 1854 that A. Morlot recognised the first interglacial bed, and the same author put forward the view that there had

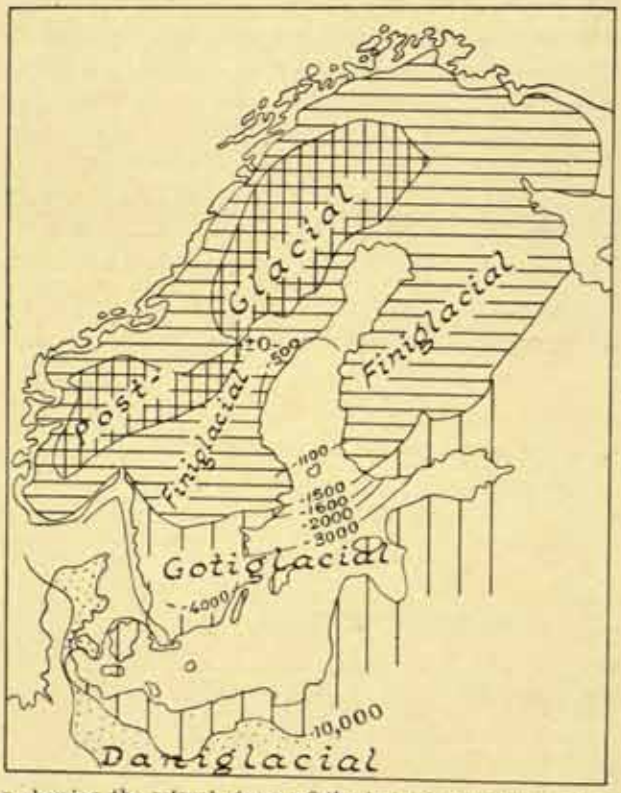


Fig. 6. Sketch-map showing the retreat stages of the last ice-sheet in Scandinavia and the lands around the Baltic. The numbers give the year before the close of the Ice Age when the ice-edge stood at the position of the number. (After Sauramo.)

been three glacial periods separated by two interglacials. For a long time his view had only a few supporters. Later, James Geikie came to be recognised as pre-eminently the defender of interglacial periods. He believed in the existence of no fewer than six glacial periods separated from one another by true interglacial periods. He found more support for his views abroad than at home.

It has long been known, chiefly through the work of Penck and Brückner, themselves disciples of Geikie, that there have been four great phases of extension of the Alpine glaciers. These have been given

the following names, beginning with the oldest: (1) Günz Glacial Period; (2) Mindel Glacial; (3) Riss Glacial; and (4) Würm Glacial. These were separated from one another by interglacial periods of different durations and different climates.

Following the Würm phase there were deposited a number of moraines of stadial, or substage, rank, marking oscillations in the retreat of the glaciers. These moraines have been termed Neo-Würmian. The more important stages in this retreat, all of which we may consider to belong

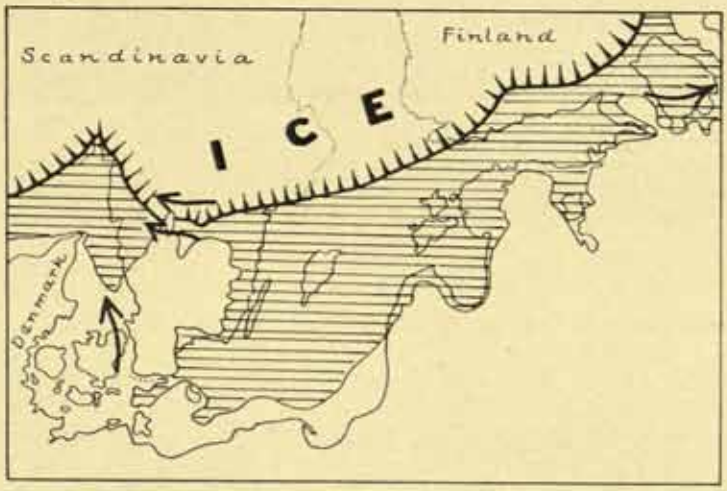


Fig. 7. Baltic Ice Lake about 8800 B.C. (After Sauramo.) Arrows are overflow channels at different stages.

to Post-Glacial time, have been called: (1) Achen recession; (2) Bühl Stadium; (3) Gschnitz substage; and (4) Daun substage.

The amount written on the subject of the correlation of British and Continental glaciations is large, and it is bewildering in the differences which exist between the different authors. No useful purpose would be served by reviewing the different theories. Instead, the writer will adopt the one which he thinks is the nearest to the truth.

Without going into detail, a glance at the maps and the following table will make clear the broad stages in which the British and Continental glaciations were synchronous:—

District Glaciation	Post-glacial.
Lammermuir-Stranraer phase . . .	Finiglacial.
North-East Antrim-Cumberland phase .	Gotiglacial.
Newer Drift	Daniglacial.
Older Drift (composite)	Older glaciations.

Bearing these correlations in mind we shall now refer in somewhat greater detail to certain phases of Baltic history.

Before the existence of the Yoldia Sea (above correlated with Late-Glacial sea in Scotland) the Baltic area was occupied by an ice-dammed

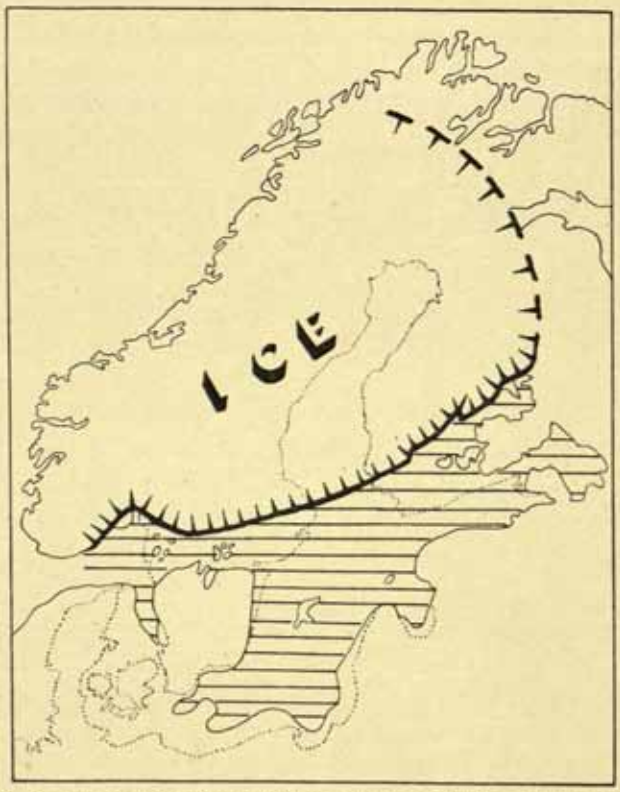


Fig. 8. Sketch-map showing the extent of the Yoldia Sea about 7900 B.C. (After Sauramo.)

lake called the Baltic Ice Lake. During the retreat of the ice from Denmark to the Ra moraines and Salpausselka, southern Sweden and the Danish Sounds stood higher than they do to-day, and there was no connection between the Baltic and the North Sea. During the early phases of this ice-lake the waters discharged through the Danish Sounds, but later they escaped through the Planta Valley south of Mount Billigen. The final discharge of the Baltic Ice Lake took place about 100 years after the second Salpausselka stage in Finland, the level of the water in the Baltic became the same as that of the ocean outside, and the Yoldia Sea stage began. The Yoldia Sea stage, which lasted less than

500 years, was brought to an end by uplift of the land in central and southern Sweden, and a new phase, the Ancylus Lake, of long duration was ushered in. The Ancylus Lake came to an end about 5000 B.C., and, therefore, overlapped Post-Glacial time by about 1000 years. The new sea which then occupied the Baltic is called the Littorina Sea, and the climate of this period was more genial than that of to-day.

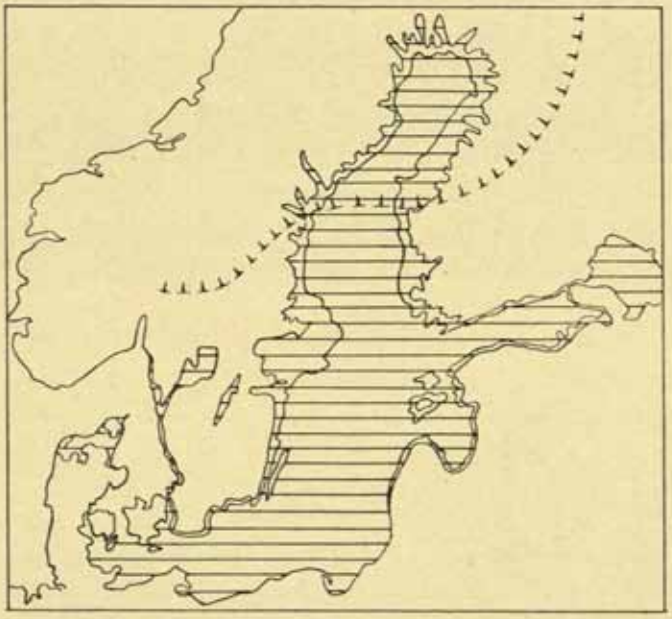


Fig. 9. The Littorina Sea at its maximum, about 4000 B.C. The broken T-line across the Gulf of Bothnia represents the approximate position of the ice-front during the preceding period of the Ancylus Lake about 7400 B.C. (After Sauramo.)

O. Montelius, the famous Swedish archæologist, placed the maximum of the Littorina transgression at about 4500 B.C. Finnish geologists are more inclined to put it about 4000 B.C.

The Littorina Sea gradually changed to the present Baltic, the proportion of its salinity diminishing as the contraction of the Sounds increased with upheaval of the land.

X. Post-Glacial Scotland.

Although the main object of the present paper is to give an idea of the glacial history of our country it would obviously be incomplete if it did not show how this history was connected with that which followed.

It will be recalled that the conditions of our country immediately before the Ice Age were also briefly summarised.

We have now arrived at a very important stage in the evolution of Scotland—the period of time when man first arrived on our shores; and from this time onward the story is one of continuous human occupation.

We have already seen that towards the end of the Ice Age, in what we have spoken of as Late-Glacial times, the sea-level in Scotland was higher than it is now. We have also pointed out that there was a considerable emergence of the land (a fall of sea-level) before the ice finally disappeared.

In the present section it is proposed to discuss another beach, much more important than the others from the archæological point of view, which is generally called the 25-foot beach, although this is rather a misnomer. It is proposed to designate this beach the Mesolithic Beach.

The Mesolithic Beach, it must be emphasised, is not a product of the submergence of the land responsible for the formation of the higher beaches. The two periods of submergence have been separated from one another by an important emergence during which there flourished the submerged forests and peat beds seen in many places around our coast.

It is generally thought, too, that this period of uplift of the land, when the sea stood some 100 feet *lower* than it is to-day, must have been of considerable duration.

The Mesolithic Beach, therefore, is more recent than the submerged forests. The latter occur beneath the deposits of the beach. The submerged forests in their turn are more recent than the higher beaches.

From the archæological point of view the Mesolithic raised beach is the most important beach in this country; for it is on it, or within its materials, that the earliest human implements in Scotland have so far been obtained.

It is the general opinion of geologists that the Mesolithic Beach represents a long period of time, probably much longer than that occupied by the sea at its present level. It is well known that glacial striæ are beautifully preserved on the coastal rocks in many parts of Scotland. There they have been exposed to wave-action since the elevation of the raised beach, and by human standards this is a long time. Yet around these same coasts the sea during Mesolithic times is believed to have cut a rock platform up to 100 yards in width. Wright has said that

this sea, which he calls the Early Neolithic sea, was the cliff-maker *par excellence*. In the cliffs behind the beach occur the caves in which in many cases the earliest inhabitants of our country sheltered.

The present writer is not convinced that the raised-beach platform was cut by the sea which deposited the fossiliferous gravels. In another

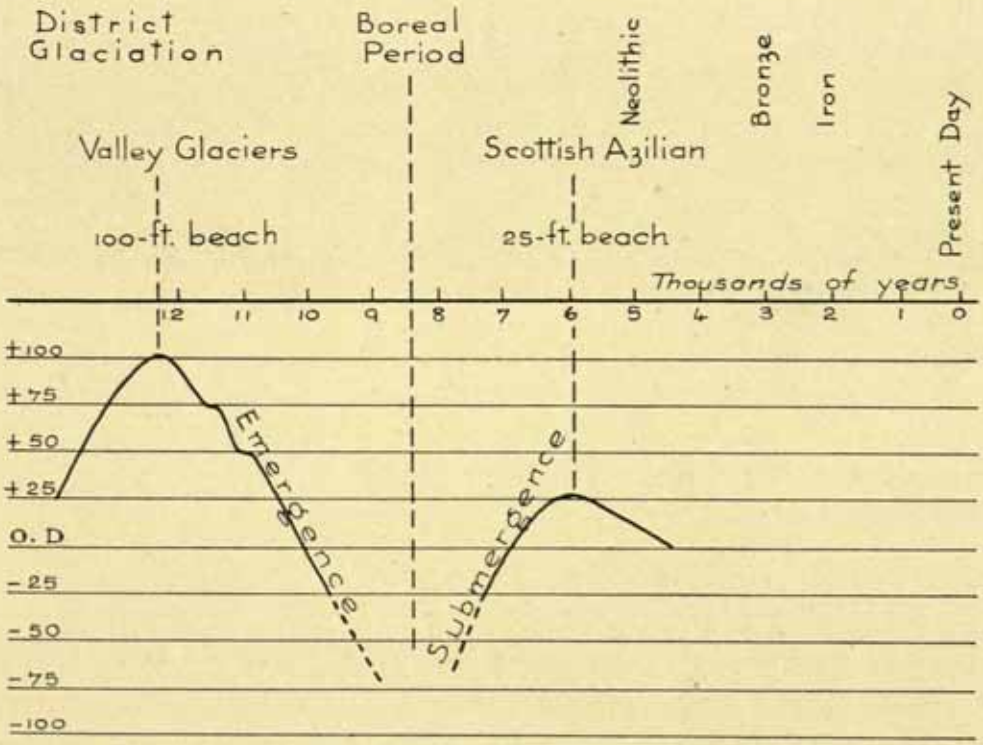


Fig. 10. Curve and time-relationships of the Scottish raised beaches (based on M. Macgregor and A. G. MacGregor).

section of this paper (Tables I and II) he has attempted to give the length of time in years since the Ice Age, and if this dating is approximately correct it would seem that since the Ice Age there has not been enough time for the cutting away of so much solid rock as is indicated in the raised platform around our coasts. This is a question, however, which we cannot discuss fully here. Suffice it to say that the writer believes that the rock platform of our 25-foot raised beaches is of Pre-Glacial, or it may be Interglacial Age, and that from an archæological point of view it is mere coincidence that the *Atlantic* sea-level coincided with the earlier sea-level.

Although the *Atlantic* raised beach is very often spoken of as the 25-foot raised beach, its height above sea-level is by no means constant. Its greatest elevation is about 40 feet, or slightly more, and this occurs over a considerable area between Loch Linnhe and the Firth of Clyde (Campbeltown, Ardrossan). The height gradually decreases outwards from this central region until the beach reaches present sea-level in Lewis and to the north of Caithness. In the Orkneys there is an absence of Post-Glacial raised beaches, and if they were ever formed in the islands they are now submerged beneath the sea.

The varying height of the beach has in the past led to a certain amount of confusion, and the *Atlantic* beach has often been spoken of as the 50-foot beach. This mistake led Professor James Geikie to say that the Azilian deposits of western Scotland must be post-Neolithic in age, since Neolithic remains have been found in a beach which he called the 50-foot beach. The latter, however, is the *Atlantic* beach and not the 50-foot beach mentioned earlier in this paper.

The Age of the 25-Foot Beach.

With regard to the age of the 25-foot beach many different opinions have been held, and it has even been thought that it has different ages in different parts of the country. Some would say that it is as old as the Magdalenian, because the Abbé Breuil, who studied the flint implements found in the beach at Campbeltown, said that they resemble the Magdalenian culture. It is hoped that in a future paper Mr A. D. Lacaille will discuss the actual culture-age of the Campbeltown flints collected by the present writer. All we need say in this connection at present is (*a*) that it has already been demonstrated that during Magdalenian times the great ice-sheets spread as far south as the limit of the Newer Drift, and (*b*) that Breuil never intended his statement of Magdalenian aspect to be interpreted as an indication of Magdalenian *Age*. Such an age is geologically impossible.

In western Scotland, where implements have been found in the raised-beach materials, they are of three cultural types: (1) Azilian; (2) Azilio-Tardenoisian; and (3) Neolithic. The flints found in the same beach in Antrim have been identified as belonging to various periods of the Mesolithic, as well as to the Palæolithic. It has been said that at Campbeltown the beach is Palæolithic; at Oban and elsewhere in the neighbourhood, Azilian; and farther south and in Antrim, Campignian, etc. The late Professor Gregory has even

suggested that in southern Scotland the 25-foot beach may be of Bronze Age.[1]

As far as the writer sees the evidence, the cultural aspect of the beach materials will give no indication whatever of the age of our 25-foot beach. It is one of those cases where the archæologist is dependent on the geologist and botanist in order to date his implements.

Geological Evidence.—The connection between the 25-foot raised beach and the climatic optimum was established as long ago as 1892 by the famous Irish naturalist, R. Ll. Praeger, from the study of the life of the time as it is recorded in the deposits on the Antrim coast. Praeger was able to show that certain characteristic species which lived in the 25-foot sea had a more northerly range than they have to-day, and his conclusion has since been amply confirmed. We must refer briefly to Praeger's results at this stage.

According to Praeger the typical succession of the post-glacial beds in Northern Ireland is as follows:—

6. Raised beach.
   Upper estuarine clays (formed about 30–40 feet below S.L. and now about 19 feet below H.W.M.).
5. Lower estuarine clays (formed in shallow water).
4. Submerged peat (27 feet below present H.W.M.).
3. Sands and gravels.
2. Re-assorted boulder clay.
1. Boulder clay (glacial).

This section of the post-glacial deposits in the Belfast district differs from the section of the famous raised beach at Larne in that it now occurs below sea-level. The two sections are related to one another in the following way:—

Larne.	*Belfast.*
Gravelly soil (22 feet above H.W.M.).	
Coarse gravel.	
Sandy layers	Upper estuarine clays.
Coarse gravel.	
Black muddy gravel.	
Black sand (H.W.M.).	
Lower estuarine clay . . .	Lower estuarine clays.
Black sand.	
Coarse black gravel.	

[1] *Proc. Soc. Ant. Scot.*, vol. lxiv. (1929–30) p. 263.

In 1931 the following set of beds was exposed in making Milewater Dock, Belfast:—

	Feet.	Inches.
Surface clays and sand	16	..
Estuarine clays	12	..
Red sand	3	..
Peat with trees	3	..
Red sand	7	..
Grey sand	2	..
Red sand with Irish deer	3	..
Gravel resting on red sand (unbottomed)	2	6

The section was described by Professor J. K. Charlesworth and Dr Erdtman. The resemblance to Praeger's section is striking, for in both the estuarine clays were 12 feet thick and rested on sand, which in turn rested on peat. The pollen investigation of the peat by Erdtman indicates that it is of Boreal Age. Erdtman also finds that the top of the peat underlying the raised beach at Portrush on the northern coast of Antrim is suggestive of Early Atlantic times, so that the maximum submergence of this part took place after the beginning of the Atlantic.

The Antrim examples have been specially mentioned because they are historically the most interesting, but the same results have been obtained from the studies of peats below the raised beaches in many other parts of Britain as well as on the other side of the North Sea. The pollen analysis of peats beneath the carse clays of the Forth and Tay valleys indicate an Atlantic Age for the post-glacial submergence. The peat beneath the clays at Forgandenny (south of Perth) is of Boreal Age, whereas the peat overlying the same deposits dates from the Sub-boreal and Sub-atlantic.

We may, therefore, with a fair degree of confidence assume that the submergence of the country which resulted in the most conspicuous and most archæologically interesting of all our raised-beach deposits is of *Atlantic* Age. We may now use this dating as our starting-point for the discussion of the ages of the implements found in Scotland within the deposits of the beach.

Archæological Evidence.—We have no intention of referring to all the literature on the subject of the first settlers on our raised beach. Most of this is contained in the *Proceedings* of this Society, but reference may be made to a recent valuable summary of the evidence from northern Antrim by W. B. Whelan in *International Geol. Cong., Washington,* 1933, p. 1209.

TABLE II.—EARLY POST-GLACIAL TIME IN THE BALTIC REGION.

Thousands of years B.C.			
			Sub-boreal
3	Post - Glacial	Littorina Sea	Atlantic Alder & Oak mixed forest (oak, elm, lime)
4			
5		Ancylus Lake	Hazel Boreal Birch &/or Pine
6			
7	Finiglacial		Pre-boreal Birch, Pine, & Willow
8		Yoldia Sea	
9	Scanian		Sub-arctic to High arctic

In 1918 Francis Buckley commenced his pioneer investigations of the microlithic implements of the Marsden Moors, near Huddersfield, in northern England. He determined the exact horizons of the implements, and this enabled Woodhead to study the plant remains which occurred in association with the implements. The following is the section which they were able to draw up:—

5. Romano-British layer—pottery.
4. Bronze arrow-heads.

3. Cotton-grass peat, containing in the lower layers horn-cases of *Bos primigenius*.
2. Tree layer with leaf-shaped arrow-head—Neolithic.
1. Grey sand resting on rock and containing two layers (floors) with human implements:
   (*b*) Late Belgian Tardenoisian flints (patinated) with birch charcoal.
   (*a*) Early Belgian Tardenoisian flints (unpatinated) with birch and ash charcoal.

The peats of these human floors were found to contain pollen grains of birch, oak, and alder, and to have pollen grains of pine on the surface.

Since the above early researches a great deal has been done on the age of the peats resting on the implementiferous (Tardenoisian) sands of northern England, and we now know that the first settlers in Northumberland and Durham were the Tardenoisians and that they arrived during the warm dry conditions of the Boreal Period. In the Pennines the Mesolithic culture is of Upper Boreal Age, but on the north-east coast it may be Lower or Middle Atlantic. Descriptions of their settlements and implements, as well as of the associated peats, will be found in the several writings of Raistrick. In the well-known section at Peacock's Farm, Shippea Hill, Cambridgeshire, which has been studied pollen-analytically by Godwin, the transition between the Boreal and Atlantic Periods occurs immediately above the Tardenoisian level. The Tardenoisian industry of this site is of late date, probably English Late Tardenoisian (Belgian Middle Tardenoisian?). That the English Late Tardenoisian was contemporaneous with the Continental Middle Tardenoisian is suggested both by typological studies and pollen-analysis, for the latter is also of Late Boreal Age.

A people possessing a culture rather similar to that of these *pre-Atlantic* Tardenoisians of northern England settled on the sand-dunes resting on the Atlantic raised beach in southern Scotland some thousand of years *after* the Boreal Period. Within this Scottish beach, as is well known, occur the implements which are supposed to be older than the Tardenoisian and certainly they are older than the Scottish microlithic industries, but the essential point is that we now know that the raised beach which we are discussing is of *Atlantic* date, and therefore the first people to arrive in Scotland must be considerably younger than the *pre-Atlantic* settlers (Tardenoisians) of northern England.

If, therefore, we are to continue to use the terms *Azilian* and *Azilio-Tardenoisian* for the implements of the 25-foot raised beach, it must be clearly understood that they are used with a purely cultural meaning and give no indication whatever of the age of the implements. The writer suggests that these terms should always be prefaced by *Scottish* —thus Scottish Azilian instead of Azilian. The question then is, What is the age of the Scottish Azilian or Scottish Azilio-Tardenoisian? As a corollary to this is the question of the age of the Scottish Tardenoisian. Clearly the former are much younger than the English Tardenoisian. They may still be Mesolithic but belonging to the end of the period, or they may be Neolithic. There is much to be said for calling them Early Neolithic, but since there are in our country the two distinct cultural types (*a*) of the raised-beach deposits and (*b*) of the true Neolithic with polished implements and pottery, it seems better to retain the term Mesolithic for the implements of the raised beach. Contemporaneous settlers around the Baltic are generally believed to be Mesolithic. In this connection it may be pointed out that there seems to be ground for believing that the Irish Asturian develops a Neolithic aspect in the younger implements. In the north of England too the Mesolithic people abandoned most of their coastal sites at the end of the Boreal and beginning of the Atlantic. They moved inland and mixed "their culture with that of the Neolithic stock" (Raistrick, 1934, *Trans. North. Nat. Union*). Some writers believe the Scottish Tardenoisian implements are survivals of the true Tardenoisian technique into the Bronze Age. It is undoubtedly true that the microlithic implements are often associated with implements of Neolithic aspect. On the Continent too, at Zonhoven, trapezes, which are the dominant implements of the Late Tardenoisian, are known to have been flaked from polished (Neolithic) axes.

In the previous pages we have demonstrated that man is a comparatively recent acquisition to Scotland. In the same way it may be argued that the fauna and flora is also post-glacial. We do know, however, that the plants and animals migrated northward across the English border during at least one important interglacial. Of the animals, reindeer, mammoth, and woolly rhinoceros came north during the oscillation between the Older and Newer Drift glaciations. There is no evidence, however, that man came with them. Complete extermination befell the immobile forms of life that existed during the interglacial periods. We say this in spite of the fact that to-day living things exist in the glaciers of the Alps and in the great ice-sheets of Greenland and Antarctica.

The Early Post-Glacial fauna of Scotland is known from the remains embedded in certain drifts in the Midland Valley and in caves, notably in the caves near Inchnadamph in the north-west Highlands, where glacial conditions lingered for a long time.

The fauna of the Mesolithic Raised Beach is well known from the remains contained in the refuse heaps of early man in western Scotland and from the fossils in the beach itself. We do not propose to enumerate the different forms of life which existed in these times. This aspect of the subject is dealt with in Professor Ritchie's book *The Influence of Man on Animal Life in Scotland*, and in his paper "Scotland's Testimony to the March of Evolution" (*The Scottish Naturalist*, November–December, 1930, p. 161).

As pointed out by Professor Ritchie, the Late-Glacial fauna found its progress to the north cut off by the northern ocean, so that it had to remain under conditions not suited to it, and it became mixed with animals normally living under different conditions. Some of the Early Post-Glacial animals survived for a long period. The reindeer, for example, first of all accompanied by the mammoth and later by the red deer and elk, may have persisted until the twelfth century. The first reindeer that followed close on the heels of the retreating ice developed into a woodland race and became extinct with the destruction of our forests, which was begun in the Bronze Age. Associated with the reindeer in northern Scotland were Arctic lemming, Arctic foxes, bears, wolves, lynxes, and Irish elk, as well as wild horses, wild oxen, and red deer.

Shortly after the stocking of Scotland took place Britain became cut off from the Continent, and further introductions were confined to such mobile forms as birds and to the accidental dispersal of certain plants. The animals which have survived the few thousand of years since our country became populated have not remained as they were when their introduction took place. Evolution, which we usually think of as an extremely slow process, has produced considerable changes. Professor Ritchie has shown that in the case of our breeding mammals some eight distinct species and over thirty geographical races have developed under the very eyes of man. Evolutionary changes have been more marked in the case of the birds, for there are now in Scotland about thirty-two breeding species which are different from their closest European relatives. St Kilda itself has a distinct bird as well as two distinct mammals.

The present paper is an attempt to give an idea of the length of time that has elapsed since the ancestors of our present fauna and flora were introduced into Scotland.

Selected References.

Dr W. B. Wright has summarised our knowledge of Glacial and Post-Glacial Scotland in his book *The Quaternary Ice Age*. In the present summary attention is directed to a few important works published since 1914. The list is not intended to be complete, for the works mentioned contain bibliographies. Dr Wright has also reviewed the question of the Scottish raised beaches in a general paper on "The Raised Beaches of the British Isles" (First Report of the Commission on Pliocene and Pleistocene Terraces. International Geographical Union, No. 11, 1928, p. 99).

Two important Late-Glacial studies have been published by Professor J. K. Charlesworth: (1) "The Glacial Geology of the Southern Uplands, West of Annandale and Upper Clydesdale" (*Trans. Roy. Soc. Edin.*, vol. lv. part i. 1926, p. 1); (2) The Readvance, Marginal Kame-Moraines of the South of Scotland, and some Later Stages of Retreat" (*ibid.*, No. 2, p. 25).

Reference may also be made to J. B. Simpson's paper "The Late-Glacial Readvance Moraine of the Highland Border West of the River Tay" (*Trans. Roy. Soc. Edin.*, part iii. No. 24, 1933, p. 634), and to A. Bremner's summary of the glacial phenomena of north-east Scotland in "The Glaciation of Moray and Ice Movements in the North of Scotland" (*Trans. Geol. Soc. Edin.*, vol. xiii. part i. 1931, p. 17). The present writer published a brief note on "Dating the Ice Age in Britain" in *Science Progress*, No. 117, July 1935. In this the reader will find a short account of varve clays and of the method used in determining the age in years of the Ice Age in Scandinavia.

On the lines of the classic researches of Geikie, Lewis, and Samuelsson on Scottish peats (summarised in *Science Progress*, October 1907, and in *Bull. Geol. Inst. Upsala*, 10, 1910) we may mention G. Erdtman's work "Some Aspects of the Post-Glacial History of British Forests" (*Jour. Ecology*, vol. xvii. 1929, p. 112).

The Late-Glacial and Post-Glacial fauna of Scotland with suggested correlations of glaciations and human cultures are dealt with in "The Vertebrate Fossils from the Glacial and Associated Post-Glacial Beds of Scotland in the Hunterian Museum, University of Glasgow," by Professor J. W. Gregory and Dr E. D. Currie (*Monographs of the Geological Department of the Hunterian Museum, Glasgow University*, ii. 1928), and in "The Fauna of Scotland during the Ice Age: Presidential Address," by Professor J. Ritchie (*Proc. Roy. Phys. Soc. Edin.*, vol. xxi. part iv. 1929, p. 159).

With a close bearing on the origin of Scottish fauna and flora is Professor Charlesworth's "Some Geological Observations on the Origin of the Irish Fauna and Flora" (*Proc. Roy. Irish Acad.*, vol. xxxix. B, No. 16, 1930, p. 358).

In conclusion the writer wishes to thank Mr A. D. Lacaille for reading the manuscript of this paper and for making valuable suggestions in connection with the archæological dating of the various stages of glaciation and of the Thames chronology. His suggestions have been incorporated in the text.

III.

A BRONZE HANGING-BOWL FROM CASTLE TIORAM, MOIDART: AND A SUGGESTED ABSOLUTE CHRONOLOGY FOR BRITISH HANGING-BOWLS. By H. E. KILBRIDE-JONES, F.S.A.Scot.

In England, bronze hanging-bowls, or parts (usually escutcheons) of such bowls, have been found on nearly fifty sites. Many have been found in Saxon interments; but there is now little doubt that they were acquired as loot by the Saxons, to whom the art of enamelling was as a closed book. And but for the fact that the bowls were actually interred along with the remains of those who had stolen them, it is possible that we might have had to-day very few specimens with which to adorn our museums. Had the bowls remained with their orignal (Celtic) owners, they would, in all probability, have been melted down, or merely cast out into the open, where decay would have been rapid. It is as well to emphasise these points, as it was apparently not a Celtic custom to preserve curiosities of a former age, when once those objects had ceased to be useful, or to bury enamel-work in the same way as did the Saxons.

Since Saxon burials are unknown in Scotland, it is obvious that we need not be too hopeful of finding many hanging-bowls in this country. Any bowl thrown on to a midden would have a poor chance of survival; whilst burials of the period under discussion are noticeably rare. Hitherto we only knew of the existence of a single hanging-bowl in Scotland—the much-battered and rather fragmentary remains of a specimen from

Tummel Bridge, Perthshire[1] (fig. 2, 3), a bowl which had been buried along with silver penannular brooches of a fifth-century type, and perhaps by someone who wished to hide his small hoard from marauders. The presence of this bowl in Perthshire has been ascribed to a raid of the Picts south of the Border.[2] It is therefore very gratifying to be able to record the discovery of yet another hanging-bowl, this time in a locality well removed from the area of Pictish incursions. It was found sometime prior to

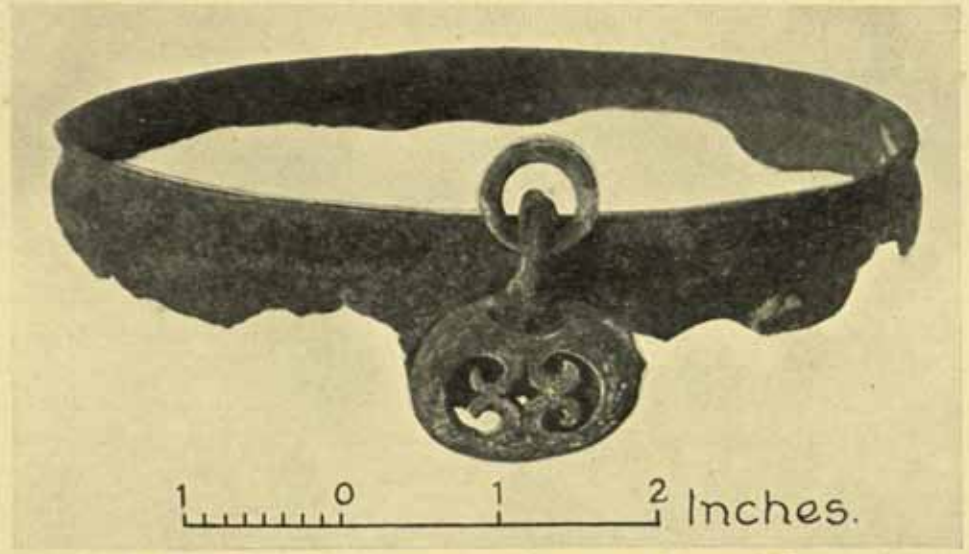


Fig. 1. Remains of Bronze Hanging-bowl from Castle Tioram, Moidart.

1928 in a kitchen-midden (along with other objects, the nature of which is unknown) at Castle Tioram, in Moidart. During a visit to Fort William last year, it was seen by Dr Alex. O. Curle in the West Highland Museum, and to him the present author is under a deep obligation for the present opportunity of describing the find.

The new bowl is in a very fragmentary condition: nothing remains apart from the rim and shoulder, and one escutcheon, together with a ring for suspension (fig. 1 and fig. 2, 1). The bowl is only 6½ inches in diameter. It has been spun from a single piece of bronze (a difficult process, and achieved by the continued application of heat) and the walls are less than 1 mm. in thickness. The metal thickens above the shoulder, the neck is slightly hollow, whilst the rim has been hammered down

[1] *Proc. Soc. Ant. Scot.*, vol. xxii. p. 268.
[2] Leeds, *Celtic Ornament*, p. 145.

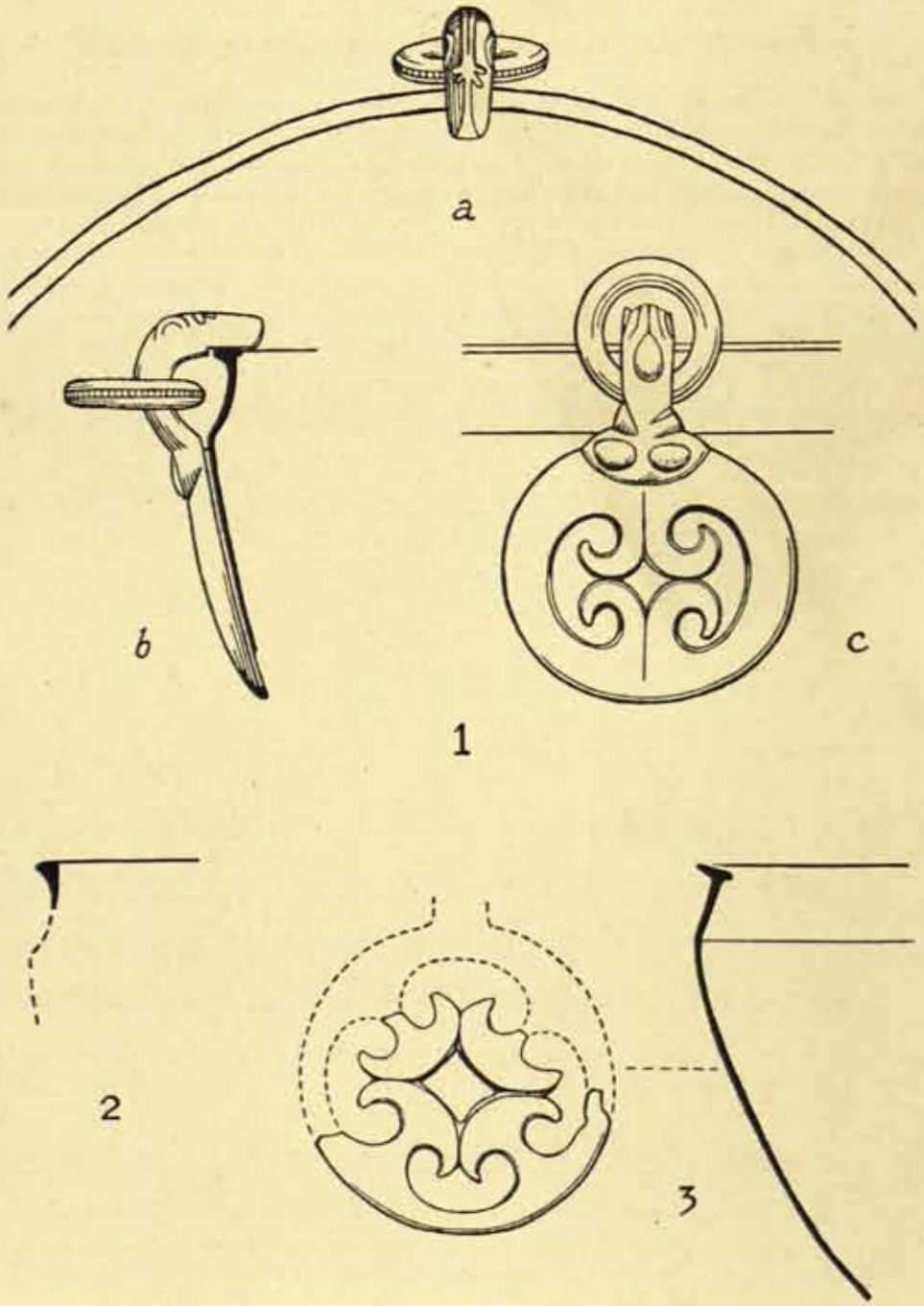


Fig. 2. Scots Hanging-bowls: (1) Castle Tioram, Moidart; (c) escutcheon, with (b) side-view and section of bowl, and (a) top elevation. (2) Fragmentary Rim from Tummel Bridge, Perthshire. (3) Section of Bronze Hanging-bowl, and Escutcheon (restored) from Tummel Bridge, Perthshire. (½.)

from above, thereby producing a slight eversion and inversion, giving a width to the top of the rim of nearly 3 mm. The object of producing this T-girder form of rim was for the prevention of sagging, or buckling, which would otherwise have taken place at the points of suspension when the bowl was hung aloft.

The single remaining escutcheon, the obverse of which is slightly convex, has an openwork design of two laterally opposed *palmettes*. (Not every one will agree about this, so that later we propose to examine the design, which also appears on another bowl from England, in detail.[1]) The hook has a zoomorphic form, both ears and eyes being clearly indicated. Along the top of the "head" runs a thin, raised moulding which terminates in a small raised oval panel (barely discernible) at the back of the head.[2] Below this, at the junction of hook and escutcheon, are other two small, oval panels; but decay is such that it is impossible to determine whether or not they bore ornamentation. The ring is encircled on the outside by ladder ornamentation.

There is no indication as to whether the bowl had originally three or four escutcheons; but, in view of its small size, it is probable that there were but three escutcheons. When complete, the bowl must have been more or less hemispherical in shape, and it doubtless possessed a wide kick in the base, which quite possibly bore a print both inside and outside.

The discovery of the new bowl provides us with an excuse for setting forth our ideas of an absolute chronology for British hanging-bowls; and we do so all the more readily because we find that our ideas differ fundamentally from those of Mr Kendrick (who was the first person to study in detail the typology of British hanging-bowls)[3] and more or less absolutely from those of Mlle Henry, whose very recent contribution[4] to the subject is just the sort of article which stimulates us to rival activities, since, by her own admission, she is unable to discover a chronological sequence for the bowls.

Although the type of bowl with which we propose to deal originated in Britain during the Roman occupation, hanging-bowls were actually known in these islands in la Tène times. So far, there is but one such

[1] See p. 218.

[2] I am indebted to Mr A. J. H. Edwards, Assistant Keeper, for drawing my attention to the manner in which the moulding terminates in the panel. Decay is such that this can only be made out with any degree of certainty with the help of a powerful lens.

[3] *Antiquity*, vol. vi. pp. 161 *et seq.*

[4] *Journ. Roy. Soc. Ant. Ireland*, vol. lxvi. pp. 209 *et seq.*

bowl; it was found at Cerrig-y-Drudion, Denbighshire,[1] and it is an import.[2] It was made probably in the second century B.C. The bowl was provided with four chains and hooks for suspension, so that little special significance can be attached to the quadruple as opposed to the later triple arrangement of the escutcheons.[3]

The remaining British hanging-bowls may be divided into three groups—(I.) Romano-British; (II.) Celtic; (III.) Kentish—for reasons which will become obvious as we proceed.

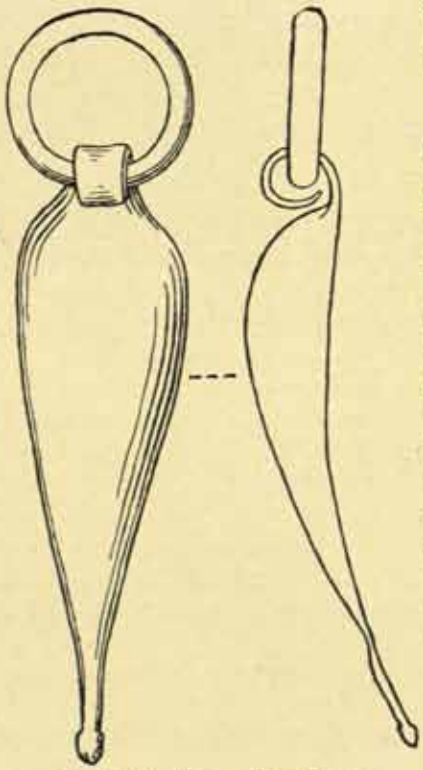


Fig. 3. Escutcheon from Roman Fort at Newstead. (¼.)

Group I. (Romano-British).—It is to be doubted whether the Cerrig-y-Drudion type of bowl was ever manufactured in Britain. In fact, it is not until Roman times that we meet the form of hanging-bowl which forms the subject of this paper. From the Roman Fort at Newstead, Roxburghshire, we have just the kind of primitive-looking escutcheons[4] (fig. 3) which we would associate with the earliest of the hanging-bowls.[5] These escutcheons are long and kite-shaped, and they number four. They are hollow and have very convex surfaces, and they would appear to be hand-wrought and not cast. At the top of each escutcheon is a primitive loop bent *outwards* over a free-moving ring, intended for the purpose of suspension. Unfortunately, nothing remains of the bowl; but we can see, from the curve of the escutcheons themselves, that it must have been more or less hemispherical in shape.

Since Newstead was evacuated *c.* A.D. 180, we can see that these escutcheons are the earliest which we possess. But at Traprain Law, where similar-shaped escutcheons[6] were found in the hoard of Roman

[1] *Ant. Journ.*, vol. vi. p. 277. [2] Leeds, *loc. cit.*, pp. 4–5.

[3] The quadruple arrangement does not assume the importance attached to it in *Ant. Journ.*, vol. xv. p. 111.

[4] National Museum of Antiquities, Edinburgh.

[5] The Cerrig-y-Drudion type does not henceforth enter into our argument.

[6] Curle, *Treasure of Traprain*, pls. xvii. and xxx.

CORRIGENDUM

Page 211, line 4: *for* "to have been hidden in the fourth century;"
read "to be of fourth century date."

silver discovered there, we see that these plain loops have given way to hooks which certainly simulate the neck and head of a swan. That was apparently the sole development which took place over a period of more than a century, the hoard generally being considered to have been hidden in the fourth century.

But during this period other forms of bowl were finding their way into Britain from the Continent. They are represented only by their escutcheons. One escutcheon from Barton, Cambridgeshire,[1] is exactly similar to others on the bowl from Nauheim,[2] as Mlle Henry has pointed out,[3] whilst another from Silchester [4] is rather similar to the hooks of the bowl from Sackrau, Silesia. The Silchester escutcheon is heater-shaped, and the head of the hook has less of a leonine character about it than the Sackrau specimens. It is, in fact, drifting to that hippocampic form about which later we shall have a good deal to say.

Whereas the Newstead and Traprain Law escutcheons had hooks bent *outwards*, these new importations had their hooks bent *inwards*. The adoption of the latter form had served to confine the ring permanently, since it was bounded by the wall and everted rim of the vessel on one side, and by the hook itself on the other, there being, by this arrangement, less chance of the ring becoming detached. In addition, these continental bowls had straight walls, rather flat bases, and three escutcheons. All these features—the number of escutcheons, the fact that the hooks faced inwards, and the shape of the bowl itself—had a profound effect upon future developments in Britain.

The first sign of a change in form is to be seen amongst the escutcheons from Traprain Law, where one badly battered specimen looks very much as though it had had a hook which had been bent *inwards*.

There can be little doubt that the bowls for which these escutcheons were intended must have belonged to an earlier form of what Mr Kendrick has termed the Irchester type.[5] The Irchester type was a nearly hemispherical bowl of beaten bronze, possessing a cupped base, and a short inturned neck and rim. Mr Kendrick has produced evidence to show that this type of bowl, which does not possess hooks and rings for suspension, probably belongs to the end of the fourth century. But the Irchester type could not have come into existence at so late a date,

[1] *J.R.S.A.I.*, vol. lxvi. pl. xx. 3.

[2] *Ibid.*, pl. xx. 1.

[3] But we cannot agree with Mlle Henry's assertion that the Nauheim bowl is representative of the fully developed type in this country (*Ibid.*, p. 214). The only effect the form had on British bowls was to alter slightly the shape of the hemispherical type, a form of bowl which was probably existent in Britain during the period under review.

[4] *J.R.S.A.I.*, vol. lxvi. pl. xx. 2.

[5] *Antiquity*, vol. vi. p. 162, and pl. i. 1.

to become the forerunner of the present series of hanging-bowls; it must have had a prototype, because all the escutcheons which we have mentioned are earlier than the late fourth century. Fortunately, we possess that prototype in the bowl from Finningley, Yorkshire (fig. 4, 1). This bowl, as will be seen, has the same form of rim and neck as the Irchester type, but, in contradistinction to the latter, it possesses a round base. It must, therefore, be earlier than the Irchester bowl, which not being intended for suspension, probably acquired a cupped base so that it might stand upright, and not roll about as the Finningley bowl would do when set upon a table.

Our series really begins with the Finningley bowl. The escutcheons are rather like the Traprain Law specimens, except that the hooks face *inwards*, and their ends simulate the head of a hippocamp.[1] Like the continental imports to which reference has been made, the ends of the hooks fit against the neck of the vessel, and they number three. But whereas the Nauheim bowl had an everted rim, the Finningley specimen had, on the contrary, a sloping inturned neck, so that this arrangement of escutcheon and hook, modelled on the continental counterpart, was not exactly a success here. Thus do we see how already this Finningley bowl is feeling the influence of the Nauheim-Sackrau type, and later we shall watch this influence increase, so that the bodies of the succeeding bowls become increasingly fuller, the walls straighter, and the base, besides becoming flatter, also takes on a wide kick, an idea which was borrowed from the non-hanging Irchester type.

Mr Kendrick has suggested a fourth-century date for the Finningley bowl.[2] That is too late, for it is much earlier than the Irchester type, as we have seen. Also, down the back of the hippocamp's neck, and looking very much like a mane, are four little outstanding knobs. Now, knobs exactly like these occur on a rather rare type of brooch, examples of which have been found at Caerleon,[3] Richborough,[4] Corbridge,[5] and on the Continent at Heddernheim.[6] In each case, on the bows of the fibulæ, are identical knobs; and the analogy between these and the knobs on the hooks of the Finningley bowl is too striking to be entirely ignored. In Britain, these brooches seem to be mostly of early third-century date. Perhaps that is a little too early for the Finningley bowl, but there seems to be no reason why it should not date from the latter half of the same century.

[1] Leeds, *Early Anglo-Saxon Art and Archæology*, p. 8. [2] *Antiquity*, vol. vi. p. 165.
[3] *Archæologia*, vol. 78, p. 164, fig. 14, No. 17. In early third-century deposit.
[4] Third Richborough (Kent) Report, p. 78, pl. ix. 13.
[5] *Arch. Æl.*, 3rd series, vol. vii. p. 184, figs. 20–21. Attributed to A.D. 150–250.
[6] *Ibid.*, p. 184.

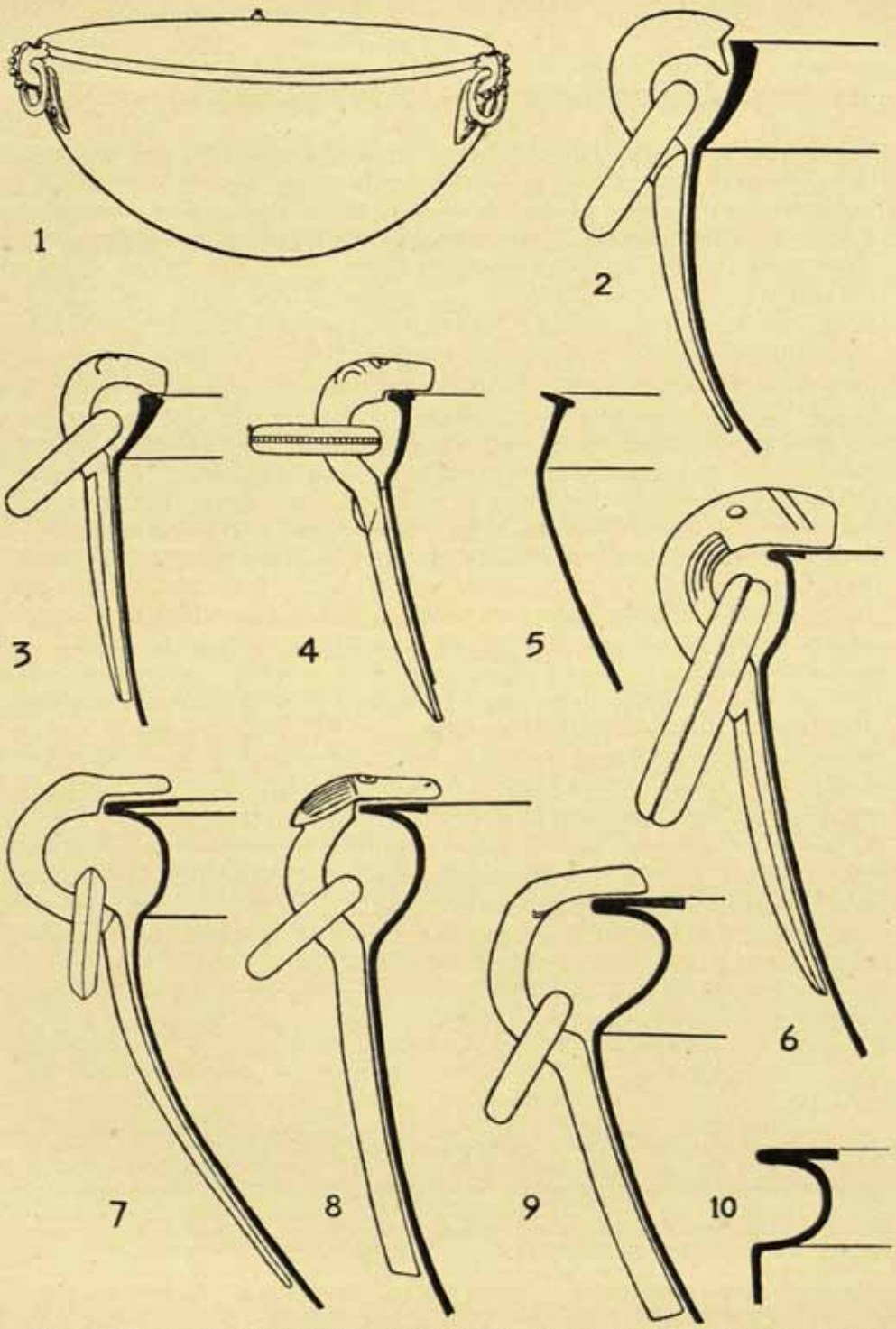


Fig. 4. (1) Bronze Hanging-bowl from Finningley, Yorkshire. Sections of Bronze Hanging-bowls: (2) Chessel Down, Isle of Wight; (3) Baginton, Warwickshire; (4) Castle Tioram, Moidart; (5) Tummel Bridge, Perthshire; (6) Wilton, Wiltshire; (7) Hawnby, Yorkshire; (8) Winchester, Hampshire; (9) Lowbury, Berkshire; (10) Capheaton, Northumberland. (¼.) (Nos. 1, 2, 7 after *Antiquity*, vol. vi.; No. 8 after *Ant. Journ.*, vol. xi.)

It was the realisation that the Finningley type of bowl was really unsuited to the new form of escutcheon which occasioned later developments of both rim and hook. But the triple arrangement of hooks facing the interior (as adopted for the Finningley bowl) was not adopted at once everywhere. The maker of the bowl from Sleaford, Lincolnshire,[1] for instance, was of a more conservative nature; for although the bowl is indubitably later than the Finningley bowl—as we can see from its possessing a fuller body and a cupped base—he has preserved the old quadruple arrangement of hooks bent outwards. When, however, we look at the bowl from Chessel Down, Isle of Wight (fig. 4, 2), we see that we are already beyond the start of a rapidly progressive series; for it is obvious that there is a fairly wide gap between this bowl, with its much fuller body, its slightly hollow neck, and its thickening rim, and the specimens from Sleaford and Finningley. And between the Finningley and the Chessel Down bowls we must place those several detached escutcheons from Sarre, Kent,[2] from Newham Bog,[3] and perhaps also those from Twyford, Leicestershire,[4] since all belong to a common form—kite-shaped escutcheons with circular appendages at the bases, and all hooks bearing hippocampic features. The Chessel Down bowl would seem to be about the last of this family, since nothing beyond a V-like moulding has been given to the ends of the hooks, to suggest the opened jaws, and these mouldings here fit against the outer edge of the rim. This has been achieved by moving up the three escutcheons until they were level with the shoulder. The surfaces of the escutcheons are also less convex.

We must mention here the rather unique escutcheon from Basingstoke, Hampshire (fig. 12, 4), which, as Mr Leeds has recently pointed out,[5] belongs to a bowl with a primitive rim. This enamelled escutcheon[6] is clearly of an ornithomorphic form, and it is somewhat reminiscent of later imported Gallo-Roman ornithomorphic fibulæ.

Another example of the hippocampic form, which incidentally introduces us to a new form of openwork escutcheon, comes from Faversham, Kent (fig. 11, 4). Here the hook has assumed the form of a rather lively

[1] *Antiquity*, vol. vi. pl. i. 5.
[2] *J.R.S.A.I.*, vol. lxvi. pl. xxi. 3.
[3] *Ibid.*, p. 216, fig. 4.
[4] *Ibid.*, pl. xxii. 2.
[5] *Early Anglo-Saxon Art and Archæology*, p. 9, footnote 2.
[6] Mlle Henry confuses this escutcheon with those from Needham Market, Capheaton, and Faversham (*op. cit.*, p. 229), and includes all four within her Group A, "bowls with patterns similar to those of the champlevé hand-pins, penannular brooches and latchets"—surely a sweeping statement. Apart from the Capheaton bowl, which is Romano-British, the form of the Basingstoke escutcheon, as we have remarked, is not even at home in England, least of all Ireland. It is plainly a copy of an imported design, representative of an art that was purely continental in origin, and which certainly had no direct connection with Celtic art. In addition, the Faversham, Needham Market, and Capheaton bowls are really at opposite ends of the series.

hippocamp,[1] whilst other versions of the same appear on either side of a central Latin cross. A fifth-century date for the piece would seem to be very likely.[2] Of particular importance is the fact that hardly any other form of rim except the Chessel Down type could be made to fit this escutcheon, and this gives us a clue as to when this particular form of rim was current. But, in addition, the Faversham escutcheons (they numbered three) introduce us, for the first time, to the round openwork escutcheon, a type which, a little later, enjoyed a fair though short-lived popularity. In every instance, the obverse is slightly convex.

When, after setting forth the above observations, we take a glance at other two later Kentish bowls (of Group III.), the one from Kingston,[3] the other from Faversham,[4] we begin to realise that there is nothing which we can describe as Celtic (in the sense in which we make use of the term in our Group II.) about the decoration which they bear.[5] All the decorative patterns, especially the dove-like form of the Basingstoke escutcheon and the hippocampic forms of other specimens, are entirely strange to Celtic art. The former is fairly common in Gallo-Roman art, as we have lately pointed out, and the same may be said for the latter, as Mr Leeds has demonstrated.[6] Apart from the ornithomorphic fibulæ already instanced, we can see how the dove-form persisted in Kent, if we look for a moment at the decoration of the so-called quoit brooch from Sarre;[7] another of the same type of brooch, this time from Howletts,[8] shows that there was an equal persistence of the hippocamp in the decoration. And the hippocamp is well represented on objects from the late Gallo-Roman graves at Vermand, Dept. Aisne, as Mr Leeds has said. It is therefore quite easy to see from whence the makers of the bowls included in our Group I. were deriving the patterns which they copied; and since they preferred to adopt patterns common in a foreign art, quite obviously we cannot describe the bowls adorned with these patterns as "Celtic." But, on the other hand, since, as we believe, the bowls were in all probability made by Romanized Britons, there is thus nothing amiss with our describing Group I. as *Romano-British*. The series began, as we saw, just before the third century, and

[1] Leeds, *op. cit.*, p. 8.
[2] *Ibid.*
[3] *Antiquity*, vol. vi. p. 174, fig. 8.
[4] *Ibid.*, p. 176, pl. iii.
[5] This statement is not meant to imply that the makers themselves were not Celts. What is meant is that to them Celtic Art was as a closed book, and the only patterns with which they were familiar were those which they actually utilised. This seems to suggest that the craftsmen did not come in contact with those who had preserved intact the Celtic art of their forefathers. The latter must have been hidden in the impenetrable wilds. May we suggest, in view of succeeding remarks in Group II., some district north of the Roman Wall?
[6] *Op. cit.*, pp. 4–9.
[7] *B.M. Guide to Anglo-Saxon Antiquities*, p. 55, fig. 59.
[8] *Ibid.*, p. 54, fig. 58.

it continued in the south-east of England until the seventh century. The later bowls are included in our Group III.; but they must await our attention until we have disposed of Group II. (Celtic), since the makers of the bowls forming Group III. were all forceably affected by Celtic art at its post-Roman best.

But we must mention here the bowl from Wilton, Wiltshire, since, as it is not a Kentish product, it really belongs to Group I. It is included in Group II. because it was the work of a smith who was endeavouring to imitate a bowl of that group, and it would otherwise have been impossible satisfactorily to analyse the openwork decoration of its escutcheons.

Group II. (Celtic).—The Celt was primarily a copyist, so that it need occasion no surprise to discover that the Celts living in the outer world where Rome never ruled began to copy Romano-British bowls when these came into their hands. But these imitations were unknown before the fourth century, and they are represented only by their escutcheons. The earliest specimens were found so far south as Faversham, Kent (fig. 8, 1). Probably the Kentish folk acquired them some years after the date of their manufacture, and they kept them as curiosities ; and these pieces would have given them their first glimpse of the art of a school of whose existence they must have hitherto been unaware.

The Faversham escutcheon follows closely the shape of the Traprain Law escutcheons, with their swan's-head hooks; but, in contradistinction to the latter, the hook of the former faces inwards. Its obverse, too, is flat. The decoration which it bears is in the form of scrolls, whose swelling finials have been interlocked in such a way as to form double and triple-spirals, with a single spiral below. The swelling ends of the scrolls have been transformed into ornithomorphic heads, this being a style which was typical of a school which was working in the north,[1] or north-west of Britain. The idea of transforming the finials into ornithomorphic heads "caught on" rather well, but the style did not last very long. We meet it upon Irish latchets and hand-pins, and also upon a penannular brooch with zoomorphic terminals which can be dated to the end of the third or to the beginning of the fourth century.[2] We also note a similar, but rather earlier, version of the same style on the embossed bronze brooches from Brough, Westmorland, which Professor Collingwood considers to be of third-century date.[3] The style, in weaker form, is

[1] Leeds, *Celtic Ornament*, p. 145.
[2] *Proc. Roy. Irish Acad.*, vol. xliii. p. 413, brooch No. 31.
[3] *Archæology of Roman Britain*, p. 259.

also evident upon one or two of the Scots handpins. It seems therefore that the Faversham escutcheon and print must be quite as early as the fourth century, and they are the products of a North British school.

Other pieces which were probably also the products of the northern school are the escutcheons and the print (all now lost) from Needham Market, Suffolk.[1] The shape of the escutcheons is clearly an imitation of the Romano-British kite-shaped variety with circular appendage at the base, and, so far as we may judge from the crude illustrations,[2] the Needham Market escutcheons were decorated with simple running scrolls. The style is, in fact, very little different from that of the Faversham escutcheon described above.

We can thus conclude, from our study of the shape and of the decoration of the above escutcheons, that this northern Celtic school was busy turning out very creditable enamel work before the Roman occupation of south Britain came to an end.

And this brings us to the fine bowl from Baginton,[3] Warwickshire (fig. 5 and fig. 4, 3).[4] It is apparent that the maker of this bowl was fully conversant with the Chessel Down type, as may be seen by comparing the respective forms of the bowls, and particularly of the rims. In fact, the Baginton specimen is almost an exact copy of the Chessel Down type of bowl. Nevertheless, it is slightly later, even if similar in form, for the ends of the hooks rest upon the top of the rim of the Baginton bowl, instead of against the outside edge, as was the case with the Chessel Down bowl. In addition, the Baginton escutcheons (there are four of them—a survival of the original Celtic quadruple arrangement) are round, and they bear an openwork design of two laterally opposed palmettes (exactly similar to that of the Castle Tioram escutcheon), surrounded by a border of running scrolls. Whether or not the round escutcheon is an original idea is uncertain: maybe the maker had seen one of the round Romano-British escutcheons, perhaps one of the hippocampic variety, which not only suggested to him the idea of incorporating openwork decoration in the design, but which further suggested the moulding of the hook into a zoomorphic form.[5] But if he borrowed these

[1] *Reliquary and Illustrated Archæologist*, vol. vi. p. 245.

[2] *Ibid.*, fig. 4.

[3] *Ant. Journ.*, vol. xv. p. 109.

[4] Since the Baginton bowl is now in private hands, it was not found possible to obtain the required section, and that shown in fig. 4, 3 is taken off the photograph, fig. 5, 1. I am indebted to Mr D. B. Harden, Assistant Keeper, Ashmolean Museum, for his help in obtaining information about the bowl.

[5] Zoomorphism was popular in the north during the second to fourth centuries, and in Ireland until the coming of the Vikings. Cf. *P.R.I.A.*, vol. xliii. p. 379 ff. Celtic zoomorphic forms must not be confused with Teutonic animal ornamentation; the two forms are quite distinct and bear little resemblance to one another.

ideas he certainly borrowed no art patterns from the Romano-British school. And what really stamps him as being resolutely Celtic is his

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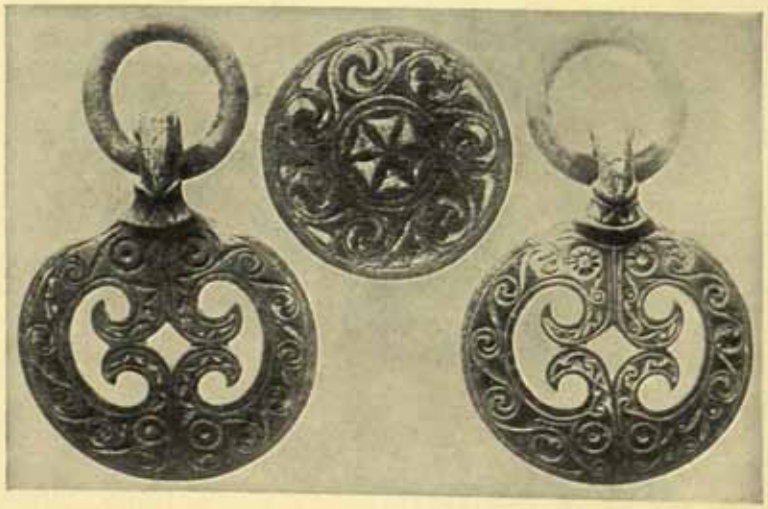

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Fig. 5. Baginton, Warwickshire: (1) Bronze Hanging-bowl (over ½); (2) Enamelled Escutcheons and Print. (¼.)

use of an openwork design of two laterally opposed palmettes, since the form which they take here (and, we may add, this also applies to the Castle Tioram escutcheon) is precisely the same as that which was current in Celtic art prior to the Roman conquest of Britain.

This last statement needs substantiation. To this end we have therefore collected together (fig. 6) a number of details from the decorations of various objects, all of pre-Roman date. Fig. 6, *a*, is a degenerate form of an enclosed palmette, of a type familiar to us in classical art. It forms a conspicuous element in the decoration of the fragmentary second-century B.C. hanging-bowl from Cerrig-y-Drudion,[1] to which

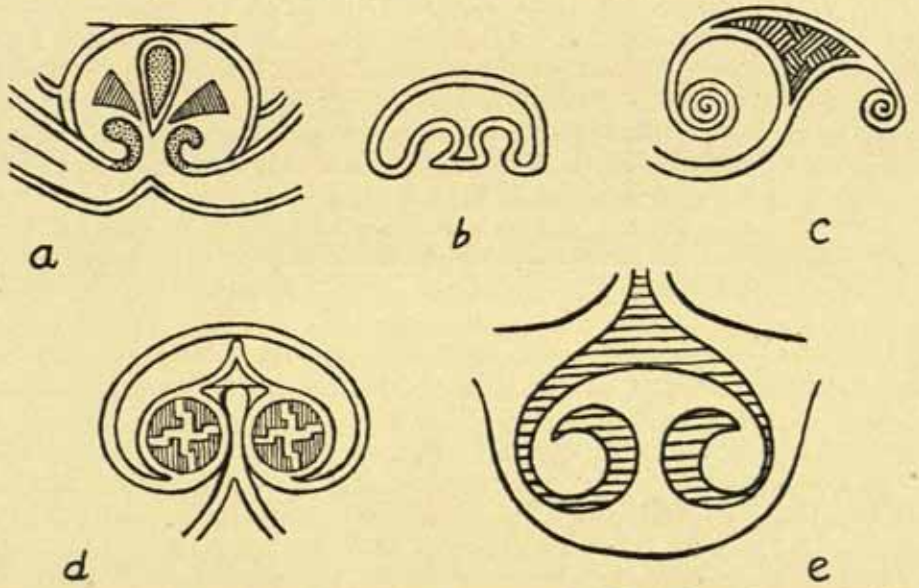


Fig. 6. Palmettes, being details from the decoration of (*a*) Bowl from Cerrig-y-Drudion, Denbighshire; (*b*) Sword from River Witham; (*c*) Sword-scabbard from Lisnacroghera, Co. Antrim; (*d*) Battersea Shield; and (*e*) Bronze Axle-cap from Thames at Brentford. (Not to scale.)

reference has already been made. A little later comes the Witham sword,[2] and we see (fig. 6, *b*) that already the palmette has lost its leaves,[3] and it has taken on a rather uncertain form—it is, in fact, in a state of flux: but the art was virile, and a little later the now thoroughly degenerate palmette became rather more definite. We would place here the palmettes (fig. 6, *c*) on the sword-scabbard from Lisnacroghera, Co. Antrim.[4] Some memory of the original conception of the classical palmette was still in the craftsman's mind, but, although he has effected

[1] *Ant. Journ.*, vol. vi. p. 277.

[2] *Catalogue of Antiquities at Alnwick Castle*, p. 66, No. 276.

[3] Regarding the degeneration of the palmette, see remarks by Mr R. A. Smith in *B.M. Guide to Early Iron Age Antiquities*, pp. 19 *et seq.*

[4] Leeds, *Celtic Ornament*, p. 9, fig. 5.

a regeneration, he has filled in his palmettes with basketry decoration (popular at this time), whilst their tendrils he has twisted into closely wound single spirals. Once this treatment of the tendrils was adopted, it was but a short step to the enclosed palmettes (fig. 6, *d*) of the Battersea shield,[1] the decoration of which has been executed in a manner quite impossible after the first century, and improbable after the end of the second century B.C.[2] Little enamelled discs, as we see, have taken the place of the single spirals. If we now look at the palmettes (fig. 6, *e*) on the bronze axle-cap which was recovered from the Thames at Brentford,[3] we observe that it does not take a very long stretch of the imagination to see how this much-simplified form was evolved from the enclosed palmettes of the Battersea shield.[4] The point which we wish to emphasise here is that all these developments had taken place by the second half of the first century B.C., which is the probable date of the axle-cap. Now, if we turn this last detail (fig. 6, *e*) on its side, and consider the hatched parts to be solid metal, and the palmette itself to be cut in openwork fashion, we see that we have the identical openwork decoration of the escutcheons of the Baginton and Castle Tioram bowls. And what is particularly interesting to us is the fact that the motif should have survived in this form completely unchanged throughout the period of the Roman occupation of Britain. This is obviously yet another case of arrested development;[5] but, after sudden exploitation here in the north, the motif, in this form, seems to have vanished completely. The recurrence of the motif on our hanging-bowls shows that, somewhere in the fastnesses of Britain, during the Roman occupation, Celtic art was carefully cherished; but the conditions under which the artists were living were unfavourable to its development.

The Baginton bowl, therefore, with its running scrolls and its openwork palmettes, is an excellent example of Celtic art at this period. And it is the product of a school which was flourishing in the north.[6] Not only have we got a very close parallel to it in the Castle Tioram bowl (and the Tummel Bridge bowl also belongs to the same group), but the running scrolls themselves provide the necessary clues in regard to its origin.

[1] *B.M. Guide to Early Iron Age Antiquities*, frontispiece.

[2] Leeds, *op. cit.*, p. 23.

[3] *Archæologia*, vol. lxix. p. 21, fig. 22.

[4] Clear traces of the palmette is how Mr Leeds refers to it (*op. cit.*, p. 59).

[5] See remarks upon brooch No. 56 in *Proc. Roy. Irish Acad.*, vol. xliii. p. 430.

[6] It is here that we feel that we must quarrel once more with the views of Mlle Henry. Firstly, the Baginton bowl is not "practically identical with the Wilton bowl" (*J.R.S.A.I.*, vol. lxvi, p. 226), and her suggested hypothesis that "we may have here a vase imported from Britain, but with handles and discs redecorated in Ireland" seems to us to be fantastic. This means that the bowl must have made the double crossing of the Irish Sea, a most improbable happening, for we must remember that it was actually found, in what must have been a Saxon interment, in Warwickshire.

If we look at the swelling ends of some of these scrolls we note that these ends bear a remarkable resemblance to degenerate ornithomorphic finials, for, in many cases, the all important "eye" is plainly visible (see fig. 7, *a*). But it is clearly a style in process of degeneration. Now, if once more we turn our attention to the Faversham pieces, we can see exactly the same kind of scrolls, but before degeneration set in (fig. 7, *b*); in the latter the scrolls are interlocked, whereas those on the Baginton escutcheons are not.[1] And since there is no doubt at all that the Faversham escutcheon is a North British product, we may say the same for the Baginton bowl.

But, whereas the designs on the Faversham pieces were representative of a "pure" style, we see that by the time the Baginton bowl was made there had been an assimilation of a motif or two from classical sources into the art; for on the enamelled print we can see an excellent representation of the hexafoil motif (fig. 5, 2). This assimilation was probably due to the fact that the Celtic artists were now beginning to realise that their art was a little arid, and they wished to avoid monotonous repetition.

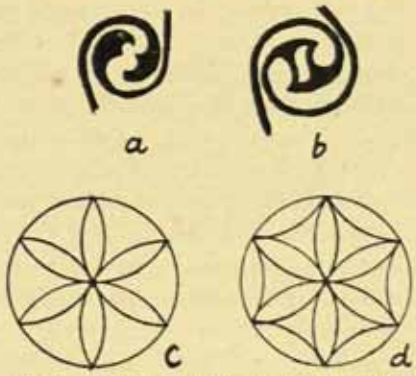


Fig. 7. (*a*) Scrolls on escutcheon from Baginton, Warwickshire; (*b*) Scrolls on print from Faversham, Kent; (*c*) Hexafoil motif, Type A; (*d*) Hexafoil motif, Type B.

The type of hexafoil motif which we have on the Baginton print is that which Dr Hencken has called Type B (fig. 7, *d*).[2] Dr Hencken has also provided us with a most useful list of all objects known to him upon which the hexafoil motif, or six-petalled rosette as he calls it, appears.[3] On referring to this list, under the sub-title *Britain, Roman Period*, we note that, with the single exception of the Lanchester altar (which has, incidentally, a bilingual inscription upon it), all the objects bearing the hexafoil motif have it in Type A (fig. 7, *c*). Now it is curious that Type A is unknown in Celtic art until a late period—probably not before the seventh century in England, and certainly not before the ninth century in Ireland—yet on early objects of Celtic workmanship in Britain, it is always Type B which appears first. Does this indicate, we wonder, that Type B was a Celtic adaptation of Type A?[4] Not every one,

[1] This point may be appreciated better by reference to *Ant. Journ.*, vol. xv. pl. xi. 2, left-hand escutcheon.

[2] *Proc. Roy. Irish Acad.*, vol. xliii. p. 197.

[3] *Ibid.*, p. 209.

[4] We are not forgetting, of course, that Type B also occurs during the Roman period on the Continent, as Dr Hencken's list shows.

probably, would have known how to produce Type B,[1] and the secret may have been held by only a few artificers. Whatever its origin, the hexafoil motif, Type B, was placed in the pattern book of the North British school, and it eventually found its way into Ireland.

As for running scrolls, there seems to be no reason why they should not have been developed from the broken-backed scroll of pre-Roman times, under the influence of the la Tène S-turn. The broken-backed scroll is represented in the north. We have it especially well represented on the embossed bronze plaque from Lambay Island, Co. Dublin,[2] which can be assigned to the first half of the first century A.D.[3] It would not have been a difficult matter to develop the running scroll from the rather tenuous, broken-backed scroll displayed on this plaque.

Not very much later than the Baginton bowl is our new hanging-bowl from Castle Tioram, Moidart (fig. 2, 1, and fig. 4, 4). The openwork decoration of the escutcheons, consisting of two laterally opposed palmettes, is identical with that of the Baginton escutcheons. But developments have taken place elsewhere. The rim of the bowl has been hammered down from above, giving to it a sort of T-girder form, whilst the neck will be seen to be less hollow. The hook, here in more pronounced zoomorphic form than we had it on the Baginton bowl, is not so hooked; the head is horizontal, whilst it has been filed down underneath so that it might rest upon, and be parallel with, the upper surface of the rim. This was an idea that was retained for some time. The collar at the base of the hooks of the Castle Tioram bowl is of larger dimensions than those of the Baginton escutcheons, and it bears two small oval panels. The ladder decoration which appears on the suspension ring (fig. 2, 1 *b*) is a form of ornamentation which is common on Irish penannular brooches during the third and fourth centuries A.D.[4] The other Scots bowl, the specimen from Tummel Bridge, Perthshire[5] (fig. 2, 3, and fig. 4, 5) is later than the Castle Tioram bowl. The neck has straightened out, whilst the rim has been hammered down to a far greater extent than before. This must have been an extremely laborious process upon metal so thin. But of particular interest is the openwork decoration of the escutcheon (here shown restored). Here, instead of two laterally

[1] Type B was produced quite simply by drawing a line through the points of any two petals, and repeating this for the next two petals on either side of the first two. These two lines were extended until they met, and the point of intersection was the centre of a circle whose arc was inscribed between the points of the middle pair of petals. This was repeated five times. Although simple, the method could easily be forgotten in a primitive community.

[2] Leeds, *Celtic Ornament*, fig. 24.

[3] *Ibid.*, p. 59.

[4] *Proc. Roy. Irish Acad.*, vol. xliii. p. 413, on brooches of Group B.

[5] *Proc. Soc. Ant. Scot.*, vol. xxii. p. 268.

opposed palmettes, we have four openwork palmettes (of exactly the same type as those of the Castle Tioram and Baginton escutcheons) arranged in a quadripartite design; whilst, in addition, the obverse of the escutcheon is now almost flat.

And so we come to the famous hanging-bowl from Wilton, Wiltshire (fig. 12, 1, and fig. 4, 6). This bowl, as we have said, really belongs to Group I.; but we have had to consider it here because it is the only specimen of its type. Without it we should have been unable to enlarge upon the form of succeeding bowls in the present group, because we should not have known how the transformation from a solid to a fold-over rim occurred; for all our later bowls possess fold-over rims.

The Wilton bowl was made by a craftsman of the Romano-British school—our Group I. He must have seen a bowl exactly like the Tummel Bridge specimen, and he set about copying it; but he was entirely ignorant of Celtic art, so that the quadripartite openwork pattern of four palmettes had no meaning for him. Instead, he mistook the central metal part of the escutcheons for a quadripartite design of four peltæ, the pelta doubtless being a motif with which he was already familiar; so that, when he made the four escutcheons of the Wilton Bowl, he reproduced these (presumed) peltæ in openwork fashion, preserving an identical arrangement. He failed rather miserably, however, when he endeavoured to reproduce the zoomorphic hooks; for the hooks of the Tummel Bridge bowl must have been very like those of the Castle Tioram specimen. The rather curious eyes had no import for him, so he indicated their existence by means of two simple, parallel incisions. He mistook the ears for eyes. The result of his handiwork is a rather angular, wooden-looking beast. The ladder ornamentation of the rings was far too finicking for him, so a single deep incision sufficed here. But, when he came to reproduce the rim of the bowl, he was fully equal to the occasion. To hammer it down, to produce the T-girder effect, was a laborious business; so he solved the problem first by bending the edge of the rim outwards, and then by neatly folding it over upon itself. The effect was the same. In fact, the idea was revolutionary, so that the old hammered-down rim eventually vanished completely. In this way the fold-over rim came into existence, and this type of rim is typical of all the following bowls of Group II.

Many escutcheons exist as isolated units. This was due to the fact that once a bowl had become too cracked for further use our Saxon thieves liked to preserve the discs as trinkets,[1] and of these we pick out

[1] As, for instance, at Camerton, Somerset (*Ant. Journ.*, vol. x. p. 53). The Oxford disc also has a hole in it near the circumference, so that it might be suspended.

fig. 8, 2, as being the earliest.[1] It was found in grave 76 at Kingston, Kent.[2] The disc is rather pleasing by its very simplicity, and it hardly seems to be at home in Kent. The design is a simple one of three linked triskeles, themselves laid out in triquetral fashion, and executed with all the characteristic Celtic feeling for curvilinear ornament. In the particular arrangement adopted here we have the foundations of all later patterns; and of importance is the method adopted for linking up the triskeles, by interlocking them at a common point in the middle of the disc and by extending the remaining arms of each, just within the circumference, until they meet and interlock.

The first of the two enamelled discs from Stoke Golding, Leicestershire[3] (fig. 8, 3), shows that the first development was in conjunction with double-spirals. But this precluded any interlocking in the middle of the disc: otherwise the arrangement is the same. When, however, double-spirals gave way to triple-spirals, we return to precisely the same arrangement as obtained on the Kingston disc. The second Stoke Golding enammelled disc (fig. 8, 4) is similar to the first, except that the end of each third scroll has been brought round to the centre, where all three were interlocked. These finials, however, for the first time, possess swelling ends, thus heralding the trumpet form on the later discs; whilst three little leaflets have been introduced at the centre to show that each finial is really separate from the others. This was the first step to the isolation of each triple-spiral as a unit in the design.

Further experimentation led to the adoption of a fourth spiral in the middle of the disc, and a specimen which exhibits this central spiral, as yet imperfect, is the first enamelled disc from Camerton, Somerset[4] (fig. 8, 5). The adoption of this fourth central triple-spiral raised problems which the craftsman seemed unable satisfactorily to solve; and one cause of this confusion was the fact that it was now becoming the custom to provide all scrolls with trumpet finials. To interlock two plain ends at right angles to one another was a simple matter, but to join, at a common point and at right angles to one another, two trumpet finials with their attendant leaflets was considerably more difficult of achievement. Only in one instance has the craftsman who made the first Camerton disc succeeded more or less satisfactorily, whilst he has made no attempt whatever to provide the central triple-spiral with swelling ends. The maker of the second Camerton disc (fig. 8, 6) laid aside the

[1] No one is going to convince us that these discs belong to the bowl to which they are at present attached.

[2] Faussett, *Inventorium Sepulchrale*, p. 55, pl. xvi. 5.

[3] *Ant. Journ.*, vol. xii. p. 174.

[4] *Ant. Journ.*, vol. x. p. 53.

problem of the central spiral, and instead devoted his attention to the remaining three triple-spirals with the purpose of perfecting them, and this, we note, he has achieved rather well. Here all the little leaflets, indicating the terminations of the interlocking developed trumpets, are thoroughly in order. A third leaflet has been added in the angle formed by the junction at right angles of the trumpet ends, whilst a fourth has been introduced into the red enamel filling, perhaps because the enamel was likewise supposed to possess trumpet characteristics. This fourth leaflet had not been incorporated in the first Camerton disc. Lastly, it will be observed that the introduction of these leaflets was gradually bringing about the isolation of each triple-spiral from its fellows. And to accentuate the developed trumpet effect the spirals themselves became thin and tenuous.

It is curious to note how the triquetral conception persisted down the centuries, a persistence that is very well exemplified in the second Camerton disc. For we see that the corners formed by the interlocking trumpet finials, just within the circumference, have been slightly extended, and additions, in the form of other two arms to each such corner, have been made, thus forming a supplement to the design of three additional triskeles, the extended arms of which have been made to enclose the central pattern, thereby indicating that the arrangement, which we noted on the Kingston disc, was still current practice, the only essential difference being the elaboration of the pattern as a whole.

The only problem which still remained to be solved was that of the central triple-spiral. We lack a suitable disc, demonstrating the intermediate stage between experimentation and perfection; but perfection has been attained in the Oxford disc (fig. 8, 7). Here also, in addition to the usual red enamel, yellow enamel has been added as a filling for the spirals and for the outer trumpet ends. Another escutcheon that may be more or less contemporary with the Oxford disc is that from Middleton Moor, Derbyshire (fig. 10, 1). Here also we include another escutcheon, this time a bird-shaped specimen, from Benniworth, Lincolnshire[1] (fig. 8, 8). We only include it here because the technique employed seems to be very similar to that of the Oxford disc. It shows a Celtic pattern applied to a Romano-British form of escutcheon. But it is an enigma; the design is late, but the style and the shape of the escutcheon itself indicate that it should be more or less contemporary with the Oxford disc.

Mr Kendrick has postulated a theory[2] to the effect that the pelta played an important part in the evolution of the interlocked spirals

[1] *Ant. Journ.*, vol. xvi. p. 98.

[2] *Antiquity*, vol. vi. p. 169.

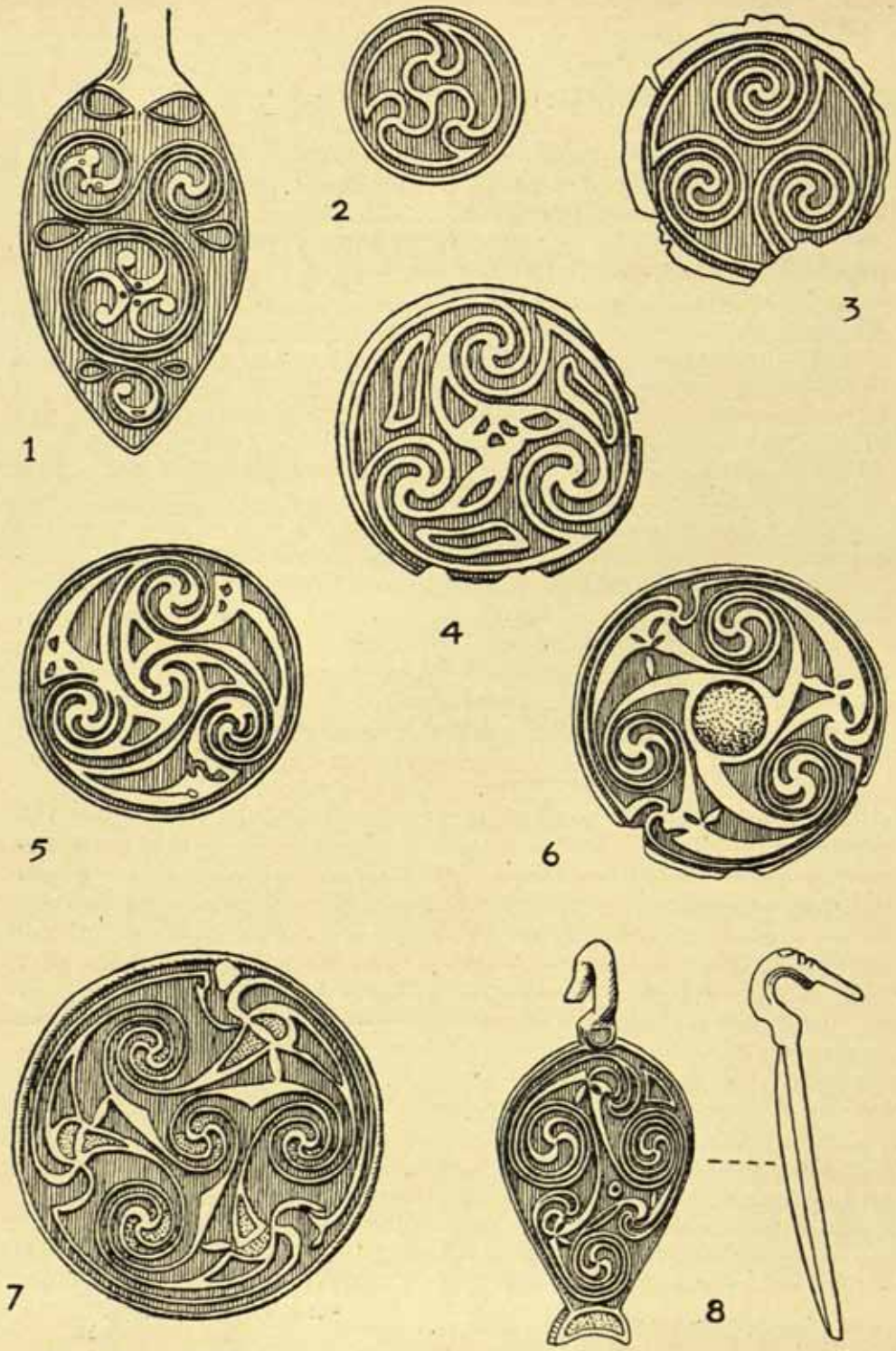


Fig. 8. Enamelled Hanging-bowl escutcheons and discs of same: (1) Faversham, Kent; (2) Kingston, Kent; (3 and 4) Stoke Golding, Leicestershire; (5 and 6) Camerton, Somerset; (7) Near Oxford; (8) Benniworth, Lincolnshire. (All ⅓, except 1, 3, 4 ⅔.)

(Nos. 1, 8 after Leeds; Nos. 2, 7 after *Antiquity*, vol. vi.; Nos. 3–6 after *Ant. Journ.*, vols. x. and xii.)

that adorn the above discs. Mr Leeds concurs.[1] We are to suppose that, in order to produce the above patterns, three pelta-like scrolls were set on edge, in reference to the circumference of the disc, in such a manner that all three could be interlocked at the centre of the disc. The suggestion is ingenious, if forced, and we might have been tempted to concur also but for the fact that our present study has shown how the whole pattern of the Oxford disc was but a development of the simple design on the Kingston disc, and that the whole basis of that design was the *triskele* and not the pelta. In fact, the pelta, as a classical motif, and therefore foreign to Celtic art, had considerably less influence on the

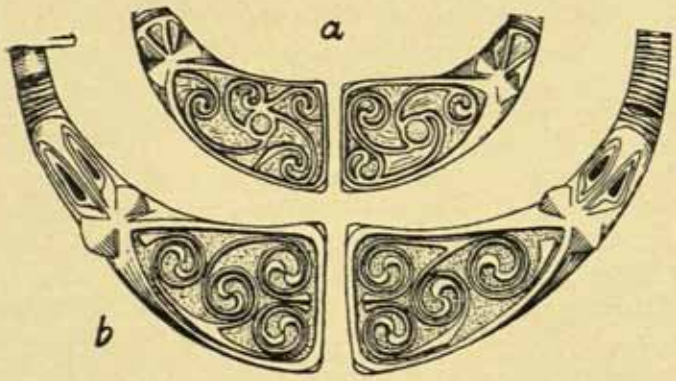


Fig. 9. Enamelled zoomorphic terminals of penannular Brooches from Ireland. (½.)

development of patterns in Celtic art than is generally conceded. Apart from the openwork peltæ of the Wilton bowl, there is not one single instance in which the pelta played any part at all in the development of the patterns upon the present series of escutcheons. Those who uphold this pelta theory even see the motif's extending influence in the early manuscripts and in Irish art generally. It is not true: it cannot be proved.

But to demonstrate that our present derivation of the design, on the Oxford disc, from a triquetral motif is really justified, we illustrate (fig. 9) two objects which were made in a country which may be said to have been considerably less influenced by classical art than was the case with Britain. These two penannular brooches with zoomorphic terminals from Ireland show that the development of the spiral in that country was along similar lines to that outlined for the present series of escutcheons. We have already shown how the design of fig. 9, *a*,

[1] Leeds, *Celtic Ornament*, p. 149; *Early Anglo-Saxon Art and Archæology*, p. 12.

was evolved from the triskele, by a process which began by bending the ends of the arms of that motif into single spirals.[1] Here, on this mid-fifth century brooch, we not only see how such a triskele had to be distorted so that it might fit in the rather irregular space available on the terminal, but how an effort has been made to link up these scrolls as a result of the single giving way to the double-spiral. And in regard to the double-spirals themselves that element of confusion which is visible is that which is nearly always present in Celtic art during the early stages in the evolution of a design. In addition, the free ends as yet show little or no signs of swelling. But when we look at the second brooch (fig. 9, *b*), which is of early sixth-century manufacture, we not only see how all these little difficulties of arrangement have been overcome, but we also note the now swelling ends of the spirals, and the fact that a fourth spiral has taken the place of the circle of opaque enamel in the centre of the design on the terminals of the first brooch. And where the swelling finials of the spirals have been interlocked, we note that they have automatically lost their trumpet character; but that character could easily be restored by the introduction of a leaflet at the junction of these ends. It is purely for this reason that we have placed the Oxford and Middleton Moor discs in their present position in the evolutionary sequence; and the same reason has occasioned our placing the Greenwich and Hitchin escutcheons (fig. 10, 2 and 3) after these two discs, because in the last two specimens we see the introduction of those leaflets which we have lately mentioned, thereby restoring the full trumpet character to these interlocked ends, and incidentally bringing about the complete isolation of each individual triple-spiral.

The Hitchin disc shows the pattern, whose evolution we have studied, in its purest and fully developed form. But, as was usual in Celtic art, once perfection had been attained, decadence was the general law; and, in the case of our escutcheons, decadence began with the central spiral and with the three little triskeles which, as we saw, formed additions to the corners made by the linking at right angles to one another of the outer trumpet finials. If we look at the escutcheon from Chesterton-on-Fossway, Warwickshire[2] (fig. 10, 4), we see that one arm of each of these little triskeles has been curtailed, and instead each is joined to a circle which surrounds the whole design, and which is just within the

[1] *Proc. Roy. Irish Acad.*, vol. xliii. p. 415. At last we see eye to eye with Mlle Henry, for she also believes that the spiral originated by coiling the ends of the arms of the triskele (*J.R.S.A.I.*, vol. lxvi. p. 233).

[2] *Archæologia*, vol. 56, p. 43; *Arch. Journ.*, vol. ii. p. 162; *Journ. Brit. Arch. Ass.*, vol iii. p. 282.

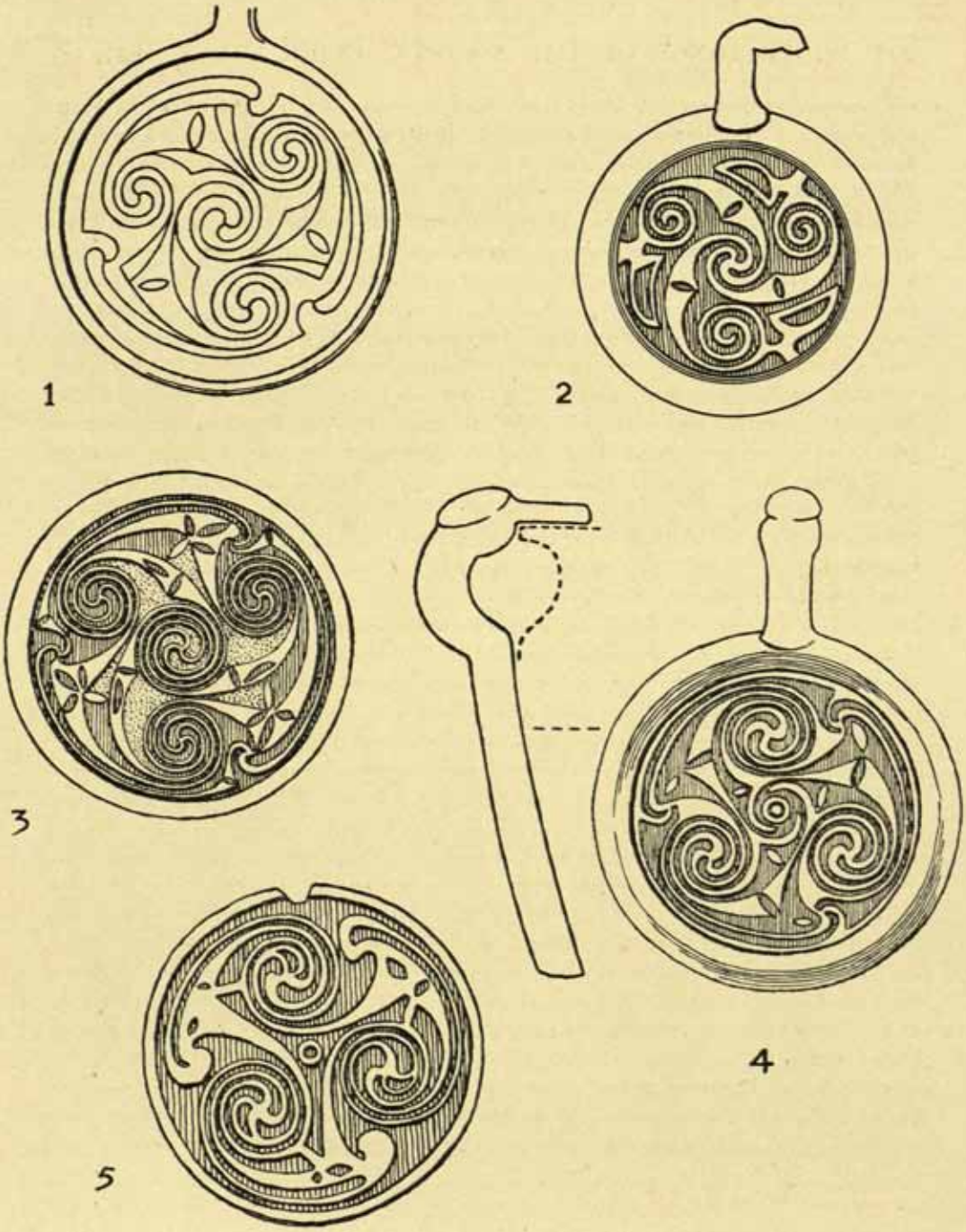


Fig. 10. Enamelled Hanging-bowl escutcheons: (1) Middleton Moor, Derbyshire; (2) Greenwich; (3) Hitchin, Hertfordshire; (4) Chesterton-on-Fossway, Warwickshire; (5) Oving, Buckinghamshire. (¼.)

(Nos. 1, 3 after *Antiquity*, vol. vi.; No. 2 after Leeds; No. 4 after Romilly Allen; No. 5 after *V.C.H. Bucks.*)

circumference. In the disc from Oving, Buckinghamshire [1] (fig. 10, 5) this circle, together with the third arm of each little triskele, has vanished. In the Chesterton-on-Fossway disc we also note how the central triple-spiral was breaking up, and this brought confusion to the outer trumpet finials. Three of these have already vanished; whilst their three counterparts have been stuck on to the outer scrolls, since otherwise they would have floated about in isolation. Later, the rather detached-looking inner trumpet ends were merged into these floating finials, and the latter once more left the scrolls free. The result of this re-arrangement is to be seen in the disc from Oving (fig. 10, 5).

The substitution of double for triple spirals occasioned a further simplification of the design. This may be clearly seen from a glance at the escutcheons (fig. 11, 1) of the famous Winchester bowl.[2] What were formerly the second arms of the little triskeles near the circumference have now been run off into the border, for lack of the third scroll to which they should have been attached. This idea persisted in the Barrington, Cambridgeshire, disc (fig. 11, 2), which, therefore, is probably more or less contemporary with the Winchester bowl; but in the case of the escutcheons of the bowl from Lowbury Hill, Berkshire [3] (fig. 11, 3), these second arms of the little border triskeles have vanished completely.

Throughout this degeneration of design we have noticed an increasing tendency to boldness, and the effect was enhanced by tinning the metal. But of particular importance is the fact that, as a result of this process of decadence, the spirals themselves (in the Winchester, Barrington, Lowbury group) were no longer interlocked; they became separate scrolls with trumpet finials. This is a characteristic feature of all late spirals, as we may observe by reference to the Book of Durrow. On the ornamental page [4] opposite the preface of St Jerome's epistle we find, within circular borders, just the kind of spirals which we have lately seen on the Winchester escutcheons. The scrolls are the same in both cases; but in the Book of Durrow, to provide the circular border, we find a combination of two triple and one double scroll, a necessary combination if the pattern were to be surrounded by such a spiral border. A further point of interest is the fact that each link is itself in the form of a developed trumpet finial, complete with the usual four leaves, and very similar to those on the Winchester escutcheons. Elsewhere on the same ornamental page are other circles containing triple-scrolls which closely resemble, in arrangement, those of the Hitchin disc; but they differ

[1] *V.C.H. Bucks*, vol. i. p. 195.
[2] *Ant. Journ.*, vol. xi. p. 1.
[3] D. Atkinson, *Lowbury*, pp. 18–21, pl. v.
[4] Mahr, *Christian Art in Ancient Ireland*, vol. i. pl. viii.

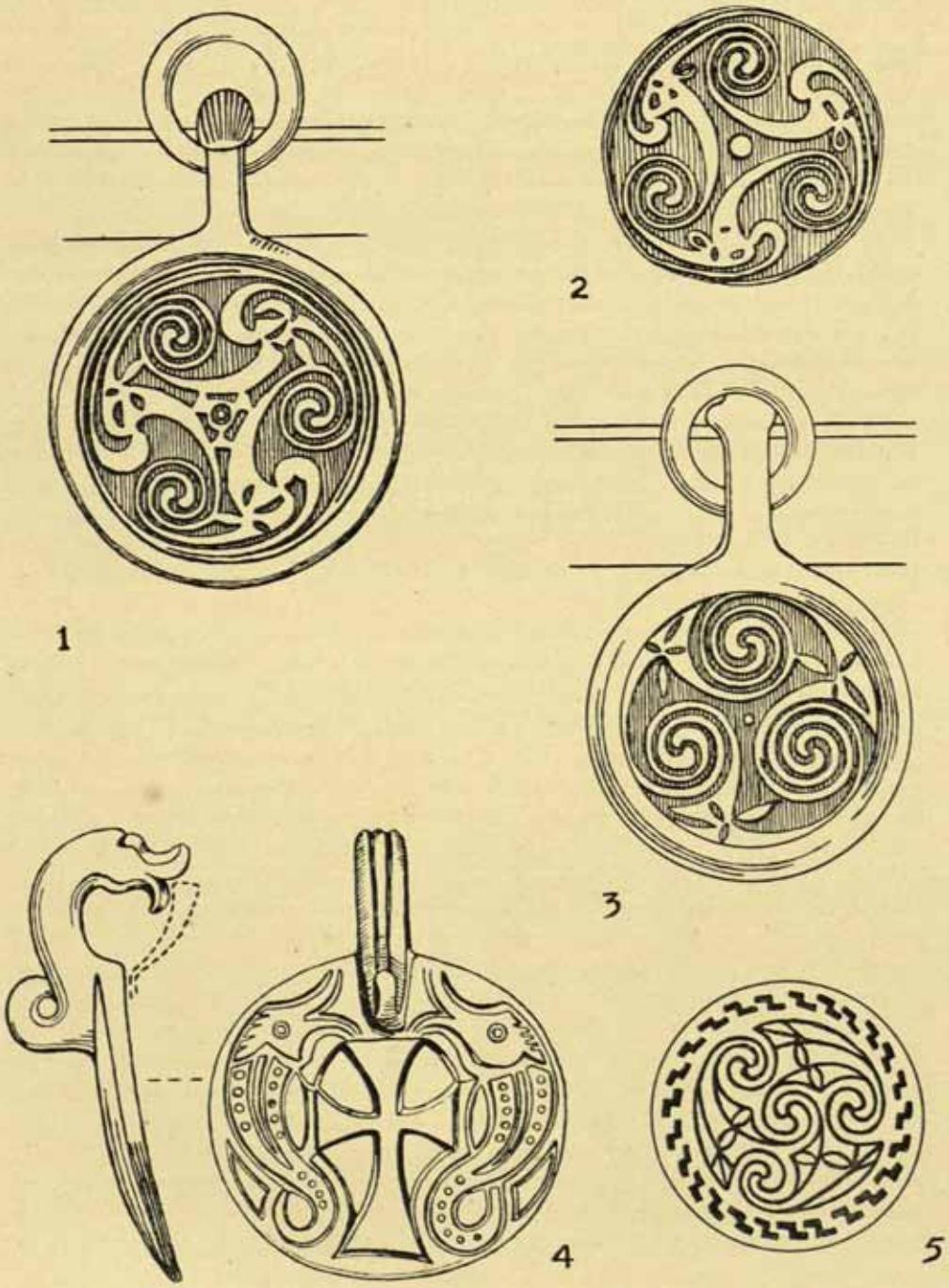


Fig. 11. Enamelled and non-enamelled Hanging-bowl escutcheons: (1) Winchester, Hampshire; (2) Barrington, Cambridgeshire; (3) Lowbury Hill, Berkshire; (4) Faversham, Kent; (5) Lullingstone, Kent. (⅓.)

(No. 1 after *Ant. Journ.*, vol. xi.; No. 2 after Leeds; No. 3 after Atkinson; No. 4 after *B.M. Anglo-Saxon Guide*; No. 5 after *Antiquity*, vol. vi.)

from the latter in that, like the double-scrolls noted above, they are not interlocked—they exist as separate scrolls. Here again we can cite a parallel in the Winchester bowl, for upon the print are identical triple-scrolls.[1]

If we now turn our attention to the forms of the bowls which we have been discussing, we see that we have additional support for our chronological sequence. We have only to compare No. 8 with No. 9 of fig. 4 (the Winchester with the Lowbury bowl) in order to see what a crude imitation is the latter of the former. The tendency was, apart from the degeneration of the zoomorphic hook, for the neck to become more and more hollow, until finally it became semicircular (fig. 4, 10). Incidentally, this sequence helps us to place the Hawnby bowl (fig. 4, 7) in its correct place. Its hook is ornithomorphic rather than zoomorphic —a sure trade-mark of the Romano-British group, and therefore it belongs to Group I.—and comparison of its profile with that of the Winchester bowl shows that it is rather earlier than the latter.

Group III. (Kentish) (sub-group of Group I.).—We have now to consider a group of hanging-bowls which may be said to have been the productions of a school that was working apparently almost exclusively in Kent. Not only were most of these bowls found actually within the county boundaries, but three (the bowls from Faversham, Dover, and Lullingstone) possess applied metal strips connecting escutcheons to a base-ring. In no other group is that peculiarity found. We are thus led to believe that, not only was there a fairly active school in existence in Kent, but that that school itself seemed to come into existence as the result of our Romano-British school losing vitality in the north, where once it seemed to be fairly active. In fact, the Kentish school seems to have come into being as the result of a mass concentration of craftsmen in that county, since the traditions which it preserved were essentially those with which we became familiar in Group I.; but, in contradistinction to the craftsmen of Group I., those responsible for the bowls of Group III. had been forcibly affected by contact with the art of Group II. The history of Group III., therefore, is practically a chronicle of an endeavour, lasting for two centuries at least, to understand the ever-changing patterns in Celtic art, and perhaps the reason why the craftsmen never rose above mediocrity was owing to the fact that, just because Celtic art was never static, they were continually

[1] It is to be regretted that the drawing of the print in *Ant. Journ.*, vol. xi., is incorrect. It represents the scrolls as being all interlocked; whereas, if reference be made to the photograph of the same print in *Antiquity*, vol. vi. p. 176, pl. vi., No. 2, it will be clearly observed that the scrolls are *not* interlocked. Accuracy in the depiction of spirals cannot be too strongly stressed.

finding it necessary to interpret a design which never appeared twice in exactly the same form.

These Kentish craftsmen had already become engulfed in the tedium of repetition before they beheld the Faversham pieces (fig. 8, 1), which, we remember, were the products of a Celtic school working in the north. These pieces were the representatives of an art which was entirely new to them, an art of whose existence they had been previously unaware. The craftsmen were at pains to understand the pattern: but why not copy it? And this they did, in the technique of their own school. We see the result of their efforts in the case of the escutcheons and base-ring of the bowl from Barlaston, Staffordshire [1] (fig. 12, 2). The swastika-like design with barbaric, bird-like finials, which we have upon the escutcheons, is but a poor imitation—a vulgar reflection—of the northern style. The southern origin [2] of the bowl is evident because of the adoption of this very swastika-like design; and we may say that it is a piece of Kentish work because it possessed, as in the case of the Faversham, Dover, Lullingstone bowls, strips of applied metal joining the escutcheons to a base-ring ornamented with a design of linked palmettes. But the local art was not entirely forgotten; the hooks of the escutcheons have been fashioned to that beloved hippocampic form so popular in Group I. The bowl itself, as we may see from the remains of the clumsy, cast rim, is very much in the Chessel Down tradition; but that does not imply that the two were contemporary.

[1] *Archæologia*, vol. 56, p. 42. Mlle Henry (*J.R.S.A.I.*, vol. lxvi. p. 237) thinks that this bowl is the product of the Celtic school. She does not state her reasons for this assertion. But any one who cares to compare the Barlaston escutcheons with any single specimen of our Group II. will see what a really clumsy object it is, with nothing of the traditional Celtic feeling for curvilinear ornament about it, so that it cannot be Celtic. It is Romano-British. Mr Kendrick (*Antiquity*, vol. vi. p. 174), like Mlle Henry, also thinks that the Barlaston bowl must be a product of the Celtic school. We entirely disagree. It was made, not by a member of the Celtic school, but by ignorant men who were attempting to recapture something of the spirit of the Celtic school, after having lived in an era of stupid ugliness. Along with the Barlaston escutcheons Mr Kendrick also includes the Northumberland specimen, and he groups all under a sub-heading "Ultimate la Tène Series." Since, as we shall show, the Northumberland escutcheon is likewise the product of Romano-British imitators, there is therefore no such art as "Ultimate la Tène Art," so named by Mr Kendrick because he thought that "the old art was dying" (*op. cit.*, p. 177). Mr Leeds (*Celtic Ornament*, p. 141) would go even further; and he applies the term to the ornament upon penannular brooches, hand-pins, and latchets. It is difficult to understand why he should have done so, because there is nothing "ultimate" about the decoration of these objects. Instead, the designs are representative of an art which, even if a little arid in conception at first, slowly increased in vigour during the interim period between the third and sixth centuries, and finally blossomed in the seventh century. Certainly, the art was definitely not dying. The term "ultimate" should be discarded forthwith, because it is inapplicable to the period under consideration.

To return to the bowls: strangely enough, Mr Kendrick compares the technique of the Barlaston work with similar work on Romano-British trumpet brooches, yet instead of seeing that the Barlaston bowl is really the work of the descendants of the same craftsmen he thinks instead that it must be Celtic.

[2] Leeds, *Celtic Ornament*, p. 147.

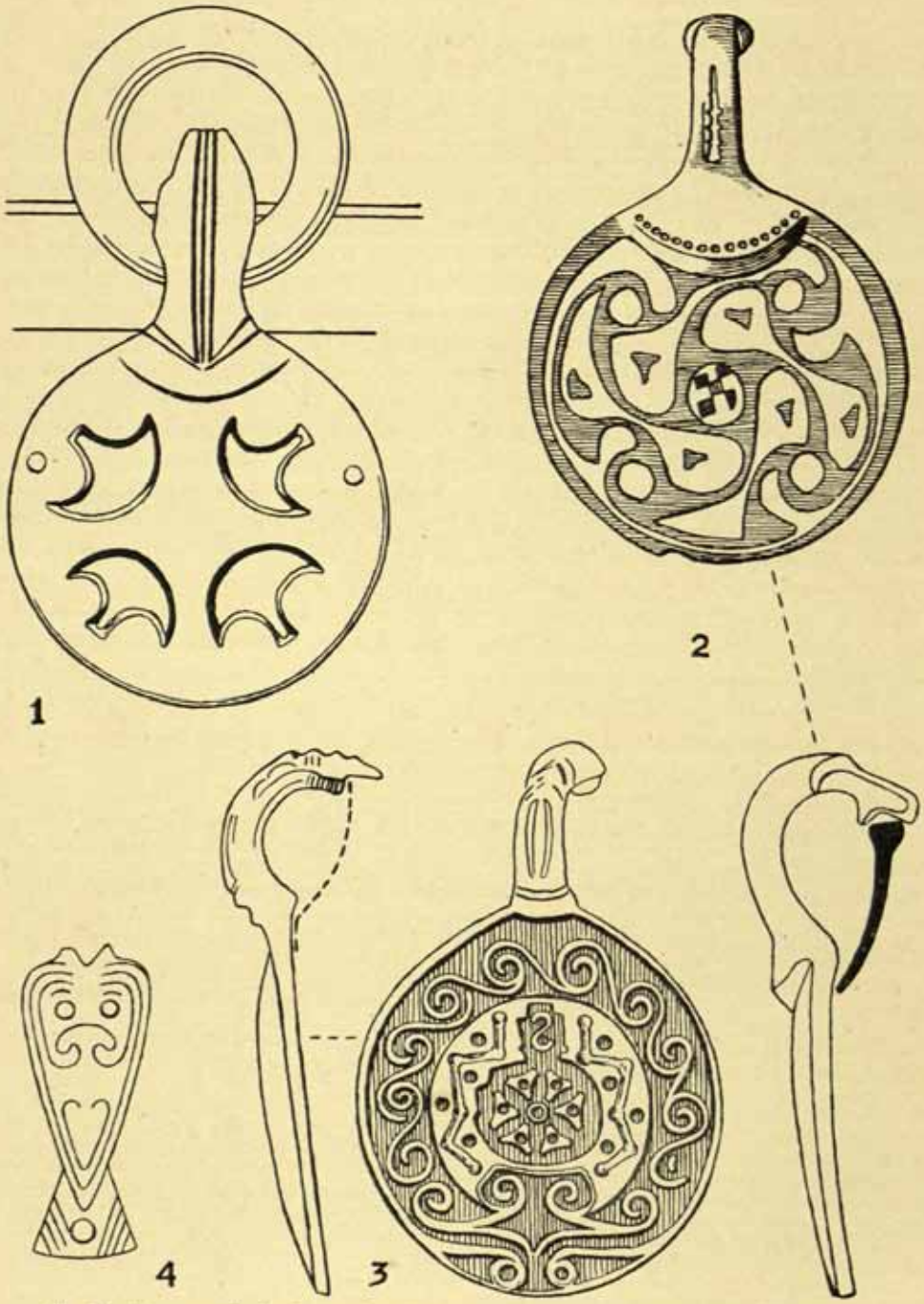


Fig. 12. Non-enamelled and enamelled Hanging-bowl escutcheons: (1) Wilton, Wiltshire; (2) Barlaston, Staffordshire; (3) Dover, Kent; (4) Basingstoke, Hampshire. (¼.) (No. 2 after Romilly Allen; Nos. 3 and 4 after *Proc. Soc. Ant.*, vol. xxii.)

The escutcheons and print from Dover (one of which is illustrated in fig. 12, 3) are just as much at home in Kent. From the form of hook we see that the bowl must have been rather like the Barlaston specimen. And on the Dover escutcheon which we illustrate we see the result of further imitation of the northern (Celtic) art. The border of rather lifeless, stiff-looking, and sometimes disconnected running scrolls looks very like the result of a feeble attempt to imitate such running scrolls as those which we saw on the Baginton escutcheons. Also, in the centre of the Dover escutcheon, the hexafoil motif, Type B, appears once more, a type which, as we saw, appeared chiefly on post-Roman Celtic work. In addition, between the petals of the motif and in the centres of the spherical triangles which constitute the spaces in between these petals, appear rather clumsy dots. Now, it was a characteristic feature of Celtic art that these spaces should be invariably filled with little punched dots. This is particularly true in the case of the motif's first appearance upon metalwork in Ireland,[1] where it is always of Type B, but later reverts to Type A. There seems to be little doubt, therefore, that the maker of the Dover escutcheon [2] must have got his hexafoil motif, not directly from classical sources, but from a North British school of metal workers.

There were apparently some craftsmen, however, in our Kentish school who remained unaffected by the contact which had been made with the work of the North British school. They were content with their few stock patterns. There are two bowls which remain to us, the work of these smiths: the first was found at Faversham [3] and the second at Kingston.[4] The Faversham bowl has the simple, inturned neck and rim, but the neck is more or less straight, showing that the bowl is a later specimen than the Chessel Down bowl. The escutcheons are round and enamelled, and they number three. They bear upon them a pattern which looks rather like a Greek cross, or it could even be taken for a quatrefoil version of the hexafoil motif.[5] Actually, the design appears to be suggestive of the Chi Rho monogram, in which all traces of the Rho have vanished. We can see other versions of the same, with but a faint indication of

[1] As, for instance, upon latchets (*B.M. Guide to Anglo-Saxon Antiquities*, p. 132, fig. 171) and upon penannular brooches (*Proc. Roy. Irish Acad.*, vol. xliii. p. 435, brooch No. 64; IPEK, 1935, 30).

[2] We have nothing to add to, and we entirely support what Mr Kendrick has said about the other Dover pieces (*Antiquity*, vol. vi. p. 169), viz.: "That they are executed in the tradition of a recognised and famous school of Romano-British enamelling, the school that was producing at the beginning of the second century such gaudy works as the West Lothian patera and the Bartlow Hills cup."

[3] The bowl is illustrated in *Antiquity*, vol. vi. p. 176, pl. iii.

[4] *Ibid.*, p. 174, fig. 8.

[5] Cf. *Ant. Journ.*, vol. xv. p. 112.

the Rho, on the Whithorn slab,[1] and also upon the Raasay cross-slabs,[2] on one of which the symbol is almost identical with that on the Faversham escutcheons. The technique is the same, if due allowance be made for the difference in the material employed. The same pattern appears upon the print of the Kingston bowl, and also upon one of the discs found at Camerton, Somerset,[3] a disc which was apparently more precious to its owner than the previous two specimens mentioned before. There is probably little doubt that the above is the true interpretation of the design. The prints on the Faversham bowl bear upon them Teutonic animal decoration, whilst upon the applied strips and base-ring is Roman-looking foliate decoration, as Mr Kendrick has pointed out.

The rim of the Kingston bowl exhibits an interesting departure from current practice. It is made up of a flat, circular ring which has been soldered on to the top of the neck, thus producing a T-form of rim. This is obviously nothing beyond a substitute for the hammered-down rim of the Tummel Bridge bowl, and it was an imitative trick devised before he who made the Wilton bowl had so cunningly solved the problem by folding over the rim in the manner already described.

Apparently, imitations of the Wilton bowl existed; for in the case of the fragment (in the British Museum) from Morden, we have the four peltæ of the Wilton escutcheons executed as an enamelled disc.[4]

Rather later in style of execution is the escutcheon from Northumberland.[5] The form of the hook indicates that the escutcheon originally belonged to a bowl with a fold-over rim, and one which was not of an early type of this rim. The crude design upon the escutcheon is obviously the result of an attempt at the reproduction of a similar pattern to that upon the Oxford or Middleton Moor discs. The craftsman found the triple-spirals too finicking, and indicated them by a circle of metal as shown. These "spirals" are linked together by clumsy strips of metal which were intended to represent the trumpet finials of the scrolls of our Group II. In Ireland we find similar, unintelligent copies, this time of penannular brooches with zoomorphic terminals, and the reason why the style was so wretched on about seventy-five per cent. of these Irish brooches was because the art itself seemed to be the patent of a few hereditary artists, who had no intention of imparting the secret of their craft to other less fortunate individuals.[6] Those not within this "ring" were, therefore, left to copy puzzling motifs to the best of their

[1] Romilly Allen, *Early Christian Monuments of Scotland*, p. 496.
[2] *Proc. Soc. Ant. Scot.*, vol. lxvii. pp. 63–64. See also *Ibid.*, p. 318.
[3] *Ant. Journ.*, vol. x. p. 53.
[4] Leeds, *Celtic Ornament*, p. 152.
[5] *Proc. Soc. Ant.*, vol. xxii. p. 73.
[6] *Proc. Roy. Irish Acad.*, vol. xliii. pp. 379 *et seq.*, for a full discussion upon this theme.

ability—and their ability was not too high. It seems that the Kentish craftsmen were in much the same position as their less fortunate contemporaries in Ireland.

We have now got to consider the vexed problem of the bowl from Lullingstone, Kent.[1] Mr Kendrick thinks that it should not be dated later than A.D. 500.[2] But that is too early. The fact that the bowl possesses four escutcheons should not be used as an argument in favour of an early date, since the bowl has a well-developed fold-over rim, whereas in the previous instances of bowls with four escutcheons the rims were all of the primitive or hammered-down form. It is thus apparent that the quadruple as opposed to the triple arrangement of the escutcheons is no guide to date. The Lullingstone bowl bears escutcheons decorated with a key-pattern border, and these borders enclose a developed trumpet design in a line technique (fig. 11, 5). The design compares very favourably with that on the Hitchin disc, but the former is nothing more than a crude copy of the latter. But Mr Kendrick argues that, just because the Lullingstone discs are actually in this line technique, and seem to be the work of a craftsman not well used to the design,[3] they must of necessity be the forerunners of all those discs bearing developed trumpet patterns which we considered in Group II. Were that so, our present chronological sequence would be entirely at fault; but Mr Kendrick's theory breaks down when we begin to try and estimate the place of the Kingston, Stoke Golding, and Camerton discs in the series, and when we realise that this coarse line technique is nowhere evident in Group II. The Lullingstone escutcheons exhibit none of the characteristic Celtic "feeling" for fine curvilinear ornament; they are entirely alien to the Celtic school, and may be classified with the Barlaston and Northumberland escutcheons. They are, in fact, the most credible achievement on the part of the Romano-British craftsmen which we have so far encountered; and, granted that, we have the explanation of the coarse-line technique and of that element of confusion which occurred in the handling of the trumpet finials. And, quite obviously, the Lullingstone bowl cannot be the forerunner of the present series when it is realised that the pattern on the escutcheons is but a vague reflection of the pattern which we saw on the Hitchin disc.

We now turn to the applied strips of metal which are so evident a feature of the Lullingstone bowl. We have strips, joining escutcheons to a base-ring, and ornamented with heavy zigzags which seem to be there as the result of a wayward fancy. At the junction of strips and

[1] The bowl is illustrated in *Antiquity*, vol. vi. p. 176, pl. iv.
[2] *Ibid.*, pp. 171–173.
[3] *Ibid.*, p. 173.

base-ring are small discs ornamented with a jolly little Teutonic animal interlacement pattern. When we look at this pattern and then at the triple knot artfully interwoven with the tines of the deer's [1] horns we see at once that, instead of the bowl being the forerunner of the series, as Mr Kendrick supposed, it actually comes very near the end of that series of bowls with developed trumpet-pattern discs. But, even if these instances are insufficient to convince the reader that the bowl is really late, let us look now at the rather peculiar axe-shaped plates which have been applied to the bowl, one on either side of each escutcheon. Here we have to face the fact that these axe-like plates bear plait-work ornamentation, which we recognise as having been an inheritance from the art of the Teutonic brigands who ousted the Britons from their native heaths, and converted the southern part of our island into what is now known as England. Now skein-work ornamentation can hardly be said to have made its appearance in England before the close of the sixth century, as Mr Leeds assures us,[2] so that its presence on these plates on the Lullingstone bowl is the most powerful argument against Mr Kendrick's suggested late fifth-century date. Moreover, if we look carefully at the entrelac on these plates we see that some of it looks very like an amateur's attempt at copying the work of the professional artificer, from which fact we may conclude that the plates were not decorated before skein-work ornament had become sufficiently general to tempt the Kentish craftsmen to imitate it. Thus the bowl cannot be even latest sixth century, and must, perforce, be of seventh-century manufacture.

A curious parallel to the arrangement of a central disc flanked by two axe-shaped plates, which we have on the Lullingstone bowl, may be seen upon the remains of the wooden shield found in the Saxon barrow at Caenby, Lincolnshire.[3] Here the arrangement is the same, and the plates likewise bear similar ornamentation. There was also in this burial an embossed silver disc showing a zone of animal interlacements. All the above goes to show that the burial probably dates from the first half of the seventh century, as Mr Reginald Smith has suggested.[4]

When we sum up our remarks about the Lullingstone bowl we see that it cannot be anything but an early seventh-century production. And since the disc bearing the developed trumpet pattern is in a similar technique to the remainder of the decoration upon the bowl, we have

[1] Dr Hencken has rightly drawn attention to the style of the stag (*Proc. Roy. Irish Acad.*, vol. xliii. p. 201).

[2] *Early Anglo-Saxon Art and Archæology*, p. 62.

[3] J. Y. Akerman, *Remains of Pagan Saxondom*, p. 30, pl. xv.

[4] *B.M. Guide to Anglo-Saxon Antiquities*, p. 86.

here a most valuable guide for dating the discs of Group II. The Lullingstone bowl was made by a Romanized Kentish craftsman who was endeavouring to combine both Celtic and Teutonic motifs upon a single piece of work. The result of his handiwork is a very extraordinary achievement.

A less ambitious attempt was the bowl from Capheaton, Northumberland [1] (fig. 4, 10). This specimen and the second Basingstoke bowl [2] must be the latest of our present series, for in both cases the hollow neck is semicircular in section. The discs of the Capheaton bowl are, unfortunately, missing; but we note that they were enclosed within a key-pattern border. The Capheaton bowl has the hexafoil motif, Type A, engraved upon the wide kick in the base, and the Basingstoke bowl bears the same motif in multiple form.

We are now in a position to hazard a few remarks in regard to the age of individual specimens. But any remarks about the dating of these bowls must necessarily be purely of a general character, since we are only too well aware that the associated finds (if any) throw very little light indeed upon the question, and have, on the contrary, rather the reverse effect. It was, of course, the apparent care with which these bowls were preserved which is at the root of our troubles. We have only got to remember the association of an early specimen, having a primitive rim, with a late form of bowl at Basingstoke to realise that the presence of a bowl in a Saxon grave along with dateable objects of Teutonic origin might rather have the reverse effect of clarifying the issue. It is, therefore, almost solely upon the analogy of each escutcheon's decoration with that of other dateable objects that we depend for our present system of dating.

We began with the second-century Newstead escutcheons of Group I. The Traprain Law specimens looked like third-century pieces; and we assigned a late third-century date to the Finningley bowl, because the hippocamp's "mane" seemed to bear a striking resemblance to the outstanding knobs on certain third-century fibulæ. But for the Sleaford, Chessel Down, and Basingstoke bowls we had no dates, and we can only say here that they must belong to the interim period between the late third-century and the fifth-century date of the Faversham escutcheons. We are handicapped by the fact that few of these bowls bear ornamentation of any sort.

When we turn to Group II. the problem becomes a little easier of

[1] *Arch. Æl.*, vol. viii., 4th series, pl. facing p. 338.
[2] *Proc. Soc. Ant.*, vol. xxii. p. 83.

solution. The small kite-shaped escutcheon from Faversham is undoubtedly of fourth-century manufacture. We are confident about this owing to the fact that the scrolls upon it possess ornithomorphic finials, and this is characteristic of a style which we have seen upon many objects of Irish origin; and we quoted the instance of a penannular brooch which can be dated to the early fourth century. The style was fairly short-lived, and it is impossible to consider the Faversham pieces to be other than of fourth-century manufacture. The Needham Market escutcheons and print belong to the same century. When we come to the Baginton bowl we see the same style in process of degeneration, and it is probable, therefore, that the bowl belongs to the first years of the fifth century. The Castle Tioram bowl is not very much later, and it may also be said to belong to the first half of the fifth century. The Tummel Bridge bowl had been buried with silver penannular brooches which we consider to be of fifth-century manufacture, and it is possible that the bowl may belong to the middle or to the latter half of that century. The Wilton bowl, although a copy of the Tummel Bridge type, may quite conceivably be a generation or more later, since imitations usually post-date originals by some years. Possibly, therefore, the Wilton bowl belongs to the first half of the sixth century.

Unfortunately, for the remaining bowls and discs of Group II. there are but few parallels. But we have noted that the style of the Oxford and the Middleton Moor discs is very much akin to that of the early sixth-century penannular brooch of fig. 9, *b*, except that, in the case of the discs, the style is rather more advanced. We may, therefore, say that the Oxford and Middleton Moor discs are probably also of early sixth-century manufacture. We say this because we believe that the art was as advanced in Ireland as it was in Britain. The type of pattern which we see upon the Hitchin disc we also see reflected in the design upon the terminals of one of the Irish penannular brooches.[1] It is significant that the enamel filling on the terminals of this brooch is in more than one colour. But the brooch is crude because it is the work of a copyist, which also means that we must allow for a certain lag. The brooch itself belongs to the latter half of the sixth century: it is possible that the Hitchin disc may belong to about the middle of the same period. We have nothing, apart from an Irish disc, itself undateable, with which to compare the Chesterton-on-Fossway and Oving escutcheons; but the Winchester, Barrington, and Lowbury scrolls compare very favourably with the spirals of the Book of Durrow, as we have pointed out. It seems impossible, therefore, that these specimens can be other than

[1] *Proc. Roy. Irish Academy*, vol. xliii. p. 430, upon the terminals of brooch No. 57.

of mid-seventh century manufacture; and, granted that, we may say that the Chesterton-on-Fossway and Oving escutcheons belong to the early seventh century.

It is a more difficult matter to deal satisfactorily with Group III., since the craftsmen were nothing more than mere copyists, and the work of copyists, as we have learnt elsewhere, is never contemporary with the work of the originators. The question is—how are we to determine the degree of lag affecting all bowls of Group III.? We have one useful guide, however, in the Lullingstone bowl. The pattern on its escutcheons is a copy of that on the Hitchin disc, but since the former belongs to the first half of the seventh century, and the latter to the latter half of the sixth century, we have thus a difference of at least a generation in length. We might consider this degree of lag to have been even more pronounced in the case of the early specimens, such as the escutcheons from Barlaston, and we are prepared to allow here a difference of even so much as half a century in length between the period of manufacture of these pieces and that of the originals. By adopting this scheme, we can consider the Barlaston specimens to be of late fourth-century manufacture, since the pattern is nothing more than a crude, clumsy copy of a fourth-century northern style; the Dover escutcheon to be of mid-fifth century manufacture, since it seems to reflect the style seen on the Baginton escutcheons; the Kingston bowl to belong to the end of the fifth century, since its rim is a type midway between that of the Tummel Bridge and that of the Wilton bowls; the Morden disc to be more or less contemporary with the Wilton bowl, since both were the work of copyists, and the Northumberland escutcheon to be of late sixth-century manufacture, since it is but a crude copy of a pattern similar to that on the Oxford disc. The Faversham bowl would then belong to the latter half of the fifth century, being rather earlier in form than the Kingston bowl, whilst the Capheaton and Basingstoke bowls must belong to the latter half of the seventh century, since the semicircular hollow neck is a rather more advanced form than that of the Lowbury bowl.

Many of these hanging-bowls, as we know, were found in Saxon graves. In particular, the Winchester and Lowbury bowls were found in seventh-century Saxon burials.[1] And it was because so many were found in Saxon burials, and because their distribution is almost entirely confined to that part of Britain which had passed under Saxon domination by the end of the sixth century (see fig. 13) that they were once looked upon as being Saxon, or to have been made by Celts working

[1] *Antiquity*, vol. vi. pp. 182–83.

for Saxon masters. Mr Kendrick has very effectively disposed of these notions,[1] and we need only remark here that the Saxons had no hand at

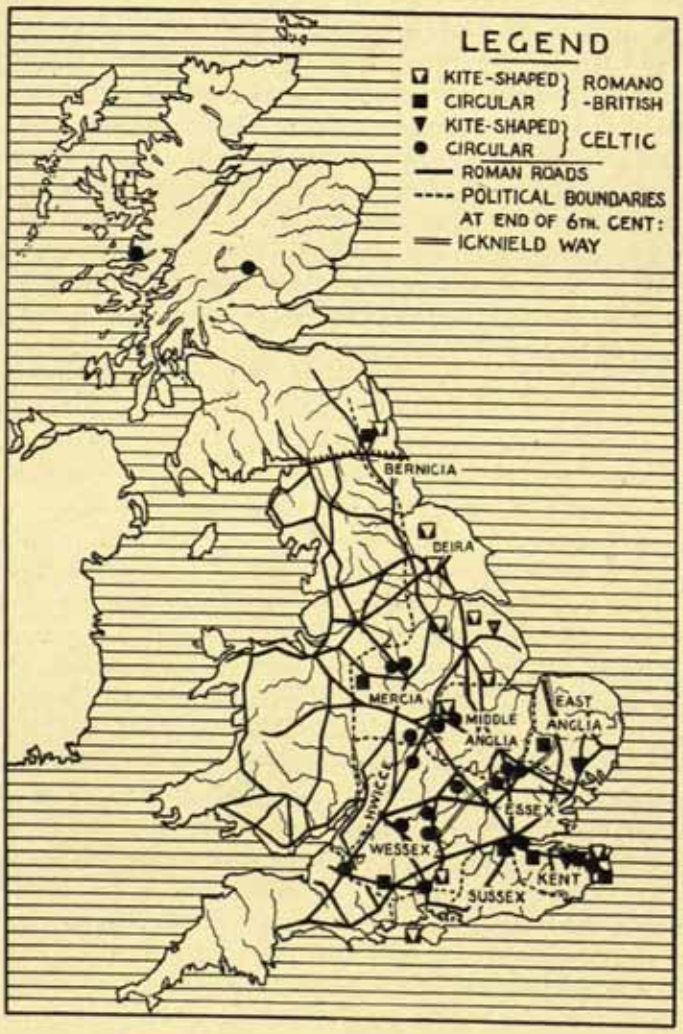


Fig. 13. Distribution-map of Bronze Hanging-bowls in Britain.

all in the bowl-making industry. We have, however, to face some very positive assertions about the lessons to be learnt from the distribution of the bowls. Mr Kendrick thinks that the bowls were made exclusively

[1] *Antiquity*, vol. vi., pp. 181 ff.

in England. Mlle Henry would prefer to believe that they (or most of them) are Irish work.[1] Mr Clapham sees Pictish influence in the designs,[2] whilst Mr Leeds considers them to belong chiefly to the south-east.[3] Professor Collingwood is a little more emphatic. He is convinced that "they (the bowls) are an indigenous product of Romano-British art, in its latest phase, and in the most Romanized part of the country." [4] He thinks further that "the analysis of their ornament and the map of their distribution conspire to prove that the revival of Celtic art to which they testify was not due to a refertilisation of the old stock by new influences washed back from the outer Celtic world where Rome had never ruled, but was thrown up by that old stock itself, out of its own continuing vitality." With the majority of these conclusions we cannot agree.

When faced with such lack of unanimity of opinion, it seems that the moment is opportune for a reconsideration and a revaluation of the available evidence. What does the distribution map (fig. 13) reveal? To begin with Group I: we note that all these Romano-British bowls are confined to the east side of our island, and they have been found on sites as far apart as Kent and Northumberland. There are strays in the Isle of Wight, and in Hampshire and in Wiltshire. Two points are to be noted about this distribution: the first is that the bowls are confined to the civil districts of Roman Britain, and the second is that these same districts were the first to suffer at the hands of Saxon raiders. The first point is important, as it clearly demonstrates that these bowls are an indigenous product of Romano-British art, as Professor Collingwood has said. The second point would help to account for the survival of some of them. It is interesting to note also that most of these bowls have come from the civil districts in the north. The reason is obscure. But if the early bowls seem to be northern products, the later Romano-British bowls (our Group III.) are almost exclusively Kentish. What does this sudden and complete change of locality mean? It means that as Roman power waned in the north, and conditions became increasingly intolerable as a result of constant barbarian raids, the Romano-British craftsmen followed their Roman protectors into the only corner of England where some semblance of law and order was maintained—that is into Kent. At Richborough it was found that an intensive occupation of the site had lasted well into the fifth century,[5] and regular communication with the Continent is also suggested. But

[1] *Journ. Roy. Soc. Ant. Ireland*, vol. lxvi. pp. 209 *et seq.*
[2] *Antiquity*, vol. viii. pp. 43 *et seq.*
[3] *Celtic Ornament*, p. 147.
[4] *Roman Britain*, p. 259.
[5] *Second Richborough Report*, p. 8.

a question that must remain unanswered is—why should these Romano-British craftsmen have found it possible, after the Roman government ended some years before 429, to continue uninterruptedly their craft in Kent right to the end of the seventh century? It would almost seem as though the Saxon conquest was nothing more than a peaceful penetration, and that the new masters of the land refrained from interference in the native arts and crafts. Indeed, the relationship between conqueror and conquered must have been rather happier than we might have been led to suppose, since it was even possible to come by authentic pieces of Celtic work (probably stolen by the Saxons) and to copy, or attempt to copy, these at leisure.

The history of the Celtic school, or schools, whose products make up our Group II., is considerably more complicated. At the beginning of that history, the school was existent in the north. We recognised as early products of this school the bowls and escutcheons from Faversham, Needham Market, Baginton, Castle Tioram, and Tummel Bridge. Their decoration showed that they were North British products. Now it is curious that all these specimens (the Baginton bowl excepted) were found on sites far removed from the find-spots of the later bowls of this group. The earliest, the Faversham and Needham Market escutcheons, came from an area covered by the distribution of Group I., so that it is possible that they may have been traded to these districts in Roman times. They were certainly made during the last century of Roman rule, as we have seen, and, since they are decorated in a "pure" Celtic style, they were probably made outside the civil districts. The Castle Tioram and Tummel Bridge bowls are sufficiently far north to suggest that there were good trade connections with the North of Scotland. The Baginton bowl was undoubtedly stolen by a Saxon in the north-west. Since, in the treatment of the decoration of these bowls, there is a degree of freedom not to be found at this time in the south, we may say that our school existed in some district where Rome had never ruled. Galloway at once suggests itself. There is no reason why this school should not have been in close contact with others in Northern Ireland; this is suggested by the discovery of the so-called water-clock at Lisnacroghera, Co. Antrim,[1] which is an exactly similar form of hemispherical bowl, with a wide kick in the base, as that with which we have been dealing. But the Lisnacroghera bowl was not made to hang, and the rim is of a different form, although it has the same dimensions as the Castle Tioram bowl.

The vaguest chapter in the history of the hanging-bowls is that

[1] *B.M. Guide to Early Iron Age Antiquities*, p. 163, fig. 105.

which deals with the remaining specimens of Group II. Nearly all these bowls are grouped in the middle and middle-west of England, as we see from the map, fig. 13. They barely penetrate to the east; and the specimens found in Cambridgeshire were undoubtedly taken there along the Icknield Way. The distribution of these bowls suggests that Wales might have been a likely centre of manufacture, but that country has not yielded a single specimen. The same may be said for Cornwall and the highland zone in England. Although developed trumpet patterns exist in Scotland, the style is not Scots. There is thus only Ireland left as a possible source of the art. It has often been argued that the art in Britain cannot have been "refertilised" from Ireland because in that country the art was considered to have been inferior, and because there was little that could be regarded as a parallel to the British development. Such conclusions were premature, because we are now beginning to discover that an exactly similar art, in no way inferior, did actually exist in Ireland at exactly the same period, and it followed almost precisely the same line of development. This at once suggests intimate interconnections. It even seems that the art may have been more at home in Ireland than in Britain, since in the former country we have it applied to a variety of objects. But, unfortunately, Irish hanging-bowls are conspicuous by their absence. This does not mean that it is unlikely that any will be found in the future. When so fine a thing as the Ballinderry lamp can reward an excavator for his skilful investigations in recent years, it is quite possible that someone may yet discover a bowl or two belonging to the period in question, especially since a disc bearing upon it a pattern rather like that of the Chesterton-on-Fossway escutcheons was recently found by Dr Hencken in the Lagore crannog.[1] This disc might have been the work of the bowl-makers themselves. Then, as we saw, we had a similar pattern to that upon the Hitchin disc reflected in the work of a late sixth-century copyist, who was responsible for the penannular brooch bearing this crude imitation. Spirals like those on the Oxford disc made their appearance on an early sixth-century Irish penannular brooch. In fact, the art of both England and Ireland at this time appears to be so similar that we might almost regard both countries as having formed a single art province but for the awkward fact that yellow enamel appears to be unknown in Ireland—or at least it was not used—at this time.[2] It is true that one of the Irish penannular brooches referred to has been enamelled in more than one colour, but we look in vain for yellow enamel. On the other

[1] Particulars kindly supplied by Dr Hencken.
[2] Yellow enamel was in fairly common use in the eighth century in Ireland.

BRITISH HANGING-BOWLS.

CHRONOLOGICAL TABLE.

Period.	Group I.		Group II.		Group III.	
	Kite-shaped Escutcheons.	Circular Escutcheons.	Kite-shaped Escutcheons.	Circular Escutcheons.	Kite-shaped Escutcheons.	Circular Escutcheons.
2nd Century.	Newstead					
3rd Century.	Traprain Finningley					
4th Century.	Sleaford Chessel Down		Faversham Needham Market			Barlaston
5th Century.	Basingstoke (?)	Faversham		Baginton Castle Tioram Tummel Bridge Kingston		Dover Faversham Kingston
6th Century.		Wilton		Stoke Golding Camerton Oxford Middleton Moor Greenwich Hitchin		Morden Mildenhall (?) Northumberland
7th Century.	Hawnby			Chesterton Oving Winchester Barrington Lowbury		Lullingstone Capheaton Basingstoke

hand, the Oxford, Benniworth, and Hitchin escutcheons had fillings of both red and yellow enamel, whilst the Barrington disc is enamelled entirely in yellow.

What, then, can we say about the distribution of the later bowls and discs of Group II.? We can only say that, as Roman power waned in the west, and indeed throughout Britain, the Celtic enamellers (members perhaps of the North British school) began to return to those districts which had recently been evacuated by the Romans, and in these same districts they began to make their bowls. These artificers may have been on good terms with the Irish. There was certainly a cultural relationship with Ireland in the early third century, but beyond that we can say little, except that it is obvious that this revival of Celtic art in England was due to its recent re-introduction into that country by Celts who had been living in parts where Rome had never ruled.

It is not surprising to find the latest bowls in Wessex, for we know that the West Saxon penetration of that part of England did not take place before the mid-sixth century, and unstable nomadic conditions must have prevailed for some time after that date. It seems that, as the Saxons penetrated into the west country, they pushed the native smiths farther and farther into the mountain fastnesses, and as they drove them out they managed to loot some of their work. The extent of the use to which the Icknield Way was put at this time may be judged from the fact that most of the latest bowls of Group II. were actually found at sites on, or very near to, that road, and we are not left in any doubt as to how the Barrington disc reached its find-spot.

In conclusion I have to express my indebtedness to Dr Graham Callander and to Dr Alex. Curle for facilities and permission to examine and draw the Tummel Bridge and Castle Tioram bowls; and to Mr Leeds for permission to reproduce his illustrations of the Baginton bowl. Thanks are also due to the Curator of the Highland Museum, Fort William, for having forwarded the Castle Tioram bowl for inspection.

IV.

SHORT CIST AND URN FOUND AT FINDON, PARISH OF URQUHART, ROSS. By J. J. GALBRAITH, M.D., D.P.H.

The cist was discovered in a field on the farm of Findon, about 9 inches under the surface of the ground. The field is the farthest east on the farm below the road from Conon to Cromarty, about halfway down and rather nearer the east end (fig. 1). Situated on the top of a knoll, the soil had been gradually displaced and the cover almost exposed. It was trodden on by a horse and broken. The slab was lifted by the ploughman and the urn within the cist removed. It was not inverted and stood near the southern end of the cist.

Fig. 1. Short Cist at Findon, Ross.

Careful examination of the contents failed to disclose any bones or other relics. The cist was constructed of squared slabs of local Old Red Sandstone. The long axis lay nearly north and south, 5° east of north magnetic. The shape was exactly rectangular, with well-finished angles. The cover was irregular and projected somewhat. Inside dimensions were: Length, 4 feet; breadth, 2 feet; depth, 2 feet. The sides were 4 inches and 3 inches thick, the ends $2\frac{1}{4}$ inches and 2 inches. At a depth of 20 inches under the surface was a layer of sand, below which was undisturbed boulder clay.

The contents of the cist consisted of earth and fragments of sandstone indistinguishable from the surrounding soil. In addition to the almost complete urn (fig. 2) was the bottom of a second, slightly smaller, of which no other pieces were found. Both were of a coarse paste con-

taining sand with large angular grains of quartz. The inside of the urn was blackened and contained some peaty material. It is decorated with bands of herring-bone pattern round the neck and lattice design

Fig. 2. Beaker found at Findon, Ross.

round the bridge. The dimensions are: Diameter at the brim, $5\frac{15}{16}$ inches; of the neck, $1\frac{1}{2}$ inch below the brim, $5\frac{5}{16}$ inches; of the body, $3\frac{3}{4}$ inches below the brim, 6 inches; and of the base, $3\frac{1}{2}$ inches. Height, 7 inches. Diameter of the base of smaller urn, $2\frac{5}{8}$ inches.

I am indebted to Miss MacIntyre, Findon, for bringing the find under my notice and giving facilities for the examination of the cist.

MONDAY, *8th March* 1937.

SIR GEORGE MACDONALD, K.C.B., President, in the Chair.

A Ballot having been taken, the following were elected Fellows:—

JOHN ALLAN, M.A., F.S.A., Keeper of Coins, The British Museum, London, W.C. 1.
Miss HELLENOR T. MICHIE, 118 Hamilton Place, Aberdeen.

The Accounts of the Society for the year 1935–36, which had been circulated among the Fellows, were unanimously approved.

The following Donations to the Museum were intimated, and thanks voted to the Donors:—

(1) By Mrs HANNAH, 27 Bellevue Place, Edinburgh.

China War Medal, 1842, with old ribbon, awarded to William Keppie, 26th Regiment Foot (Cameronians).
Queen Anne Half-Crown, Edinburgh Mint 1707.

(2) By JOHN EDMOND, 8 Gardiner Road, Blackhall, Edinburgh.

Old Cloth Brush, with red plush back, which belonged to Captain Hugo Arnot (figured in Kay's "Portraits").

(3) By JAMES CURLE, LL.D., F.S.A.Scot.

Coin of Vespasian Coh. I², p. 399. No. 419/21. Found on Ruberslaw, Roxburghshire, before 1880.

(4) JAMES WEATHERBY, Little Swinton, Coldstream.

Flanged Bronze Axe, measuring 5 inches in length, $1\frac{1}{2}$ inch across the cutting face, $\frac{15}{16}$ inch across the butt, and 1 inch across the flanges, slightly imperfect. The patina has been scoured off and the metal burnished a bright yellow. Found in an old dyke at Gordon Bank, near Greenlaw.

The following Purchase for the Museum was intimated:—

Adze of Felstone, measuring $5\frac{5}{8}$ inches by $2\frac{3}{16}$ inches by $\frac{7}{8}$ inch, found at a quarry at Swinister, three miles north of Pund of Gruting, South Delting, Voe, Shetland.

The following Donations to the Library were intimated, and thanks voted to the Donors:—

(1) By Robert C. Nesbitt, F.S.A.Scot.

The Carre Heraldic Panel. Loan to Queen Mary's House, Jedburgh.

(2) By J. Graham Callander, LL.D., Director of the National Museum of Antiquities of Scotland.

S.W.R.I. National Exhibition of Needlework in the Royal Scottish Academy Galleries, Edinburgh, 16th October to 3rd November 1934. Official Catalogue.

(3) By The Royal Incorporation of Architects in Scotland.

Quarterly Illustrated. No. 51. 1935.

(4) By H. E. Kilbride-Jones, F.S.A.Scot., the Author.

The Hypothetic Hiatus in Celtic Art. Reprint from "Ipek," vol. i., 1935.

Man. Vol. xxxi. 1931.

(5) By O. M. Dalton, M.A., F.B.A., Hon. F.S.A.Scot.

A Gold Treasure of the late Roman Period. By Walter Dennison. University of Michigan Studies, Humanistic Series, vol. xii. New York, 1918.

The following Purchases for the Library were intimated:—

A Contribution to the History of Lanarkshire. By James Alexander Wilson, O.B.E., M.D. Vol. i. Twenty Parishes. Glasgow, 1936.

Roman Malton and District. Report No. 5. A Gazetteer of Roman Remains in East Yorkshire. Collected and arranged by Mary Kitson Clark, M.A. Leeds, 1935.

The following Communications were read:—

I.

URN BURIALS OF THE BRONZE AGE AT BRACKMONT MILL, LEUCHARS, FIFE. By J. B. MEARS, L.R.C.P.Edin.

Brackmont Mill (Mr Leslie Spence) is about a mile north of the village of Leuchars in Fife, close to the Cupar-Newport Road, where it crosses the Motray Water.

The steading stands on the edge of a broad terrace, 70 to 75 feet above sea-level, in which a sand-pit has been worked for some years past. The sand is clean, reddish in colour, with intercalated beds of fine grit. It belongs to the kame system of sand-hills which is so noticeable a feature between Leuchars and St Fort. Slight differences in the texture or composition of the beds of sand render the current bedding rather a striking feature, especially after a period of dry weather and wind ablation.

The Terrain.—The relation between the glacial and later deposits of this area and prehistory is a matter of great interest, but it is too intricate to be treated in detail here. It will be sufficient at present to say that within the district between St Fort, the mouth of the Tay, St Andrews, and the tidal portion of the Eden there are some thirty square miles of sands and gravels, clay and mud. When the Ice Sheet melted, the whole country, freed from the burden, was rising. The hills in East Fife show the effects of heavy glaciation. In this area the boulder clay, however, is not deep, and is only seen in thin sheets on the flanks of the hills which encircle it. The oldest definite sea coast-line is about the 100-foot contour.

When the land had risen and the high-water mark here was about the 70-foot contour, a final phase of the Ice Age occurred. A glacier was able to push its way down the Tay at least as far as the narrow part of the Firth, east of Dundee. A glacial torrent from the melted ice poured south-eastwards through the St Fort gap. It carried an immense amount of detritus, which was spread out as a wide fan of gravel and sand-banks, having a radius of about five miles, while the finer sediment went to fill up St Andrews Bay.

Hollows between the gravel-banks or eskers and sand-hills or kames were caused by the melting of masses of stranded ice.

The land continued to rise. On a shore-line of such loose material the series of Raised Beaches, which indicate pauses of the upward move-

ment, are not well defined. In some parts tides and currents removed much material, while in others sand-banks diverted streams and broke the force of the waves.

The eventual result was to fill up St Andrews Bay with sand-beds, and, the elevation continuing, wider and wider strips were converted into dry land. At the period of maximum elevation the coast-line was farther out than at present. The period of earth movements closed with

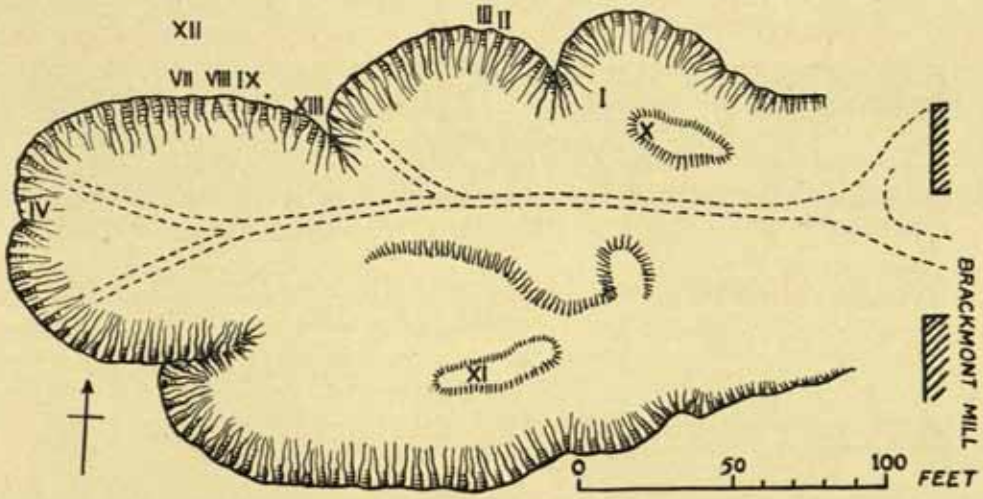


Fig. 1. Brackmont Mill Sand-pit.

an oscillation, submergence to the 25- or 30-foot contour, and a recovery to the present level, which has remained fairly stable.

The Burial Urns.—On comparing the Brackmont Hill urns with others from the district, vessels of precisely similar types are to be found, in a fragmentary state of course, on the sand-dunes which formed on the flats exposed by the final period of elevation. Brackmont Mill is about two miles west from these sites of the Bronze Age on Tents Muir. The environmental conditions during the Bronze Age here are to be considered in more detail, along with the Tents Muir area, by members of the St Andrews Prehistorians. (See note B at end.)

The Site.—The sand-pit at Brackmont Mill is (1936) about 100 yards in length and half of that in breadth, with a depth of 20 to 30 feet. On the parts most exposed to the wind the soil is not more than 9 inches deep, while nearer the farm-steading it is 2½ feet deep (fig. 1).

The Bronze Age burials to be described were in irregular groups of three or four, more or less in a line. There were no surface features to

indicate their presence. They were spread over an area of about 30 yards long by 10 wide. The group at the east end was 65 yards north-west of the house at Brackmont Mill.

On these dry and sandy hillocks and mounds wind is the most important factor in causing the accumulation or removal of soil, so that one does not find a regular sequence of growth in thickness except in favourable situations.

The top of the kame sand has in most parts a layer of pebbles, the

Fig. 2. Urn No. XII. *in situ.*

residue of a few feet of sand blown away. Such a skin of small stones, once it is formed, protects the sand from further wind erosion.

This is the oldest land surface, immediately post-glacial. It is contemporary with the earliest explorers in Scotland, presumably mesolithic, but no flints or artifacts have been found here on this horizon.

In the vicinity of the pit burials one could detect three layers separated by pebble bands, indicating periods of local deposition and ablation. The pits penetrated the lower two only.

Most of the urns were exposed when the top soil was removed. They had been placed, inverted, in shallow pits which scarcely penetrated the kame sand. One was in a deeper pit (fig. 2).

From time to time other pits have been exposed, penetrating the sand to a total depth of 3 or 4 feet, with steep sides. They were filled with soft sand, but nothing of note was found in six or seven examined.

It is not easy to account for these pits, empty of relics. They are not sections of wind channels, but are more or less circular with no special floor. They are rounded below and have no carbonaceous layers.

The urns here described are, like all others of the period, hand-made. There is no evidence of the use of the potter's wheel. For all that, in

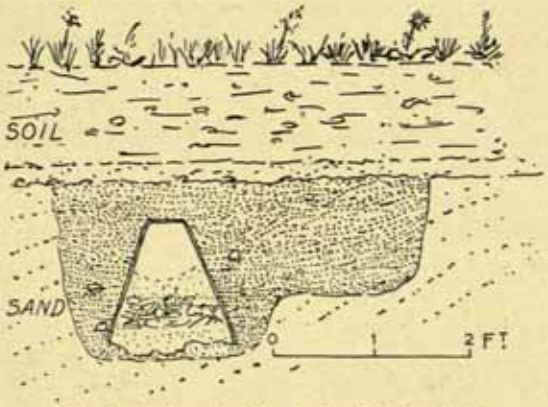


Fig. 3. Section E.–W. of pit with Urn XII.

the better class of vessels great skill and care have been used, while in others the workmanship is much rougher.

An effort was made to collect and to transfer to safe keeping at St Andrews all the prehistoric material found at Brackmont Mill.

The first question asked is invariably about the number of burials. The writer saw five *in situ*, and was able to collect the whole of the contents for examination. Major J. Edington Aitken was, fortunately, able to see two others *in situ*. Two more fine urns with much of their contents were found among the waste-heaps.

Of the nine actual burials at this site, disregarding eight or more broken vessels that are each represented by fragmentary pieces only, two had no urn and one a broken urn of small size mixed with the ashes.

The remaining six were all inverted urn burials in shallow pits without any prepared floor. Some kind of cover must have been used, otherwise the contents would have fallen out on inversion; but no indications of a cover were made out in these cases that were suitable for detailed examination.

The variations in style of these burials depend more on social factors perhaps than on time. The preparation for and ceremonial of interment varied with the wealth and respectability of the individual. The urn was specially made for the occasion. In one case, we shall see, the undertaker managed to make a mess of things, but at this funeral they had roast pork. (Urn XII.)

Two of the urns (I. and X.) are so superior in style and technique that one must consider them to be the work of an expert. There were traditional rules to be followed; and at that time social life was, without doubt, highly organised, so that it is not too speculative to suggest that there was a school or guild of urn-makers, as there was of miners, of metal-workers, and so on (figs. 4 and 6). The decoration on these vessels naturally attracts attention and interest. In the first place, no doubt, the string pattern on thin beakers was produced by the application of a cord during the course of manufacture. The string formed a very useful support for these thin-walled vessels while the clay was soft. It is reasonable to suppose that the string was used for utilitarian purposes at first, and that subsequently the impress was retained as a decorative feature. (The string which was used to tie on the cover was applied when the clay was hard, and so, of course, left no mark.)

On Urn X. (fig. 6), for instance, though there are six double-string lines round the collar, they have been made by four applications of a looped cord. (Against the utilitarian origin it has been urged that string would not be of much use—the drying cord would slacken. A cord of animal fibre, however, tightens on drying, and would still grip the drying clay.)

It is curious that the projecting collar with the narrow neck below is just the form suitable for tying on a cover, but that the external parts that would be thus covered are the only parts decorated. If one seeks a utilitarian explanation, while the string may be a survival of a supporting network or spiral employed in the earlier type, the incised lines may have been originally cut for the purpose of roughening the edge of a smooth-walled vessel to provide a grip for the cord fixing a soft cover.

It is unfortunate that the maker adhered to traditional styles alone, and left no mark that might have any personal significance—if not a coat-of-arms, at least a leaf for a badge. (Note A.)

Urn Burials.—The numbers attached to the burials or urns indicate the order in which they were found, but for convenience of description they are grouped here according to type.

Numbers I., III., X., and probably XII., are well-made vessels of the "overhanging rim" type, with a small base, conical body, and a

well-defined shoulder below a concave neck, while round the top is a collar with a projecting lower edge, undercut to meet the neck (figs. 4, 9, 6, and 8, respectively).

Number V. is a solitary fragment of a small urn of this type (fig. 17).

Numbers II. and II.*a* are similar, but are made of coarser material. They are large vessels and are decorated, but more roughly and round the collar alone, without a pattern round the neck as in the first group (fig. 10).

Number IV. is a degenerate type—presumably later, with plain walls, slightly conical, and with decoration reduced to a few scratches (fig. 15).

Number XI. is a basal fragment of a similar urn, interesting on account of grain impressions (fig. 14).

Numbers VIII. and IX. were burials without urns (fig. 13).

Number VII. contained the broken shards of a small urn (fig. 12).

Under Number VI. are grouped fragments of four vessels—in each case a piece of the rim (fig. 16). Ten or twelve other fragments found at various times are indeterminable.

Number XIII. is part of the side of a small plain cup (fig. 19).

This is, as far as I am aware, the total number of pieces of Bronze Age pottery found at Brackmont Mill. In all probability there are still fragments in some of the soil dumps, but they are scattered through many tons of sand and earth.

In addition, besides bits of modern crockery, one piece of a Roman mortarium turned up. There is, so far, no good evidence of any Roman occupation in these parts. A number of pieces of the ware that is so abundant on Tents Muir were noticed. It is probably mediæval. These shards are from rather large globose pots with an undulating edge and two handles. The material is whitish with a rather patchy green or brown glaze.

Cinerary Urns.—Number I. (fig. 4). This urn was a magnificent piece of ware. One cannot look upon its fragments without regret, for it was complete when first exposed. It was broken into small bits and the greater part was cast with sand into the contractor's lorries. Mr Spence fortunately recovered some pieces of the ornamental rim, and fragments of the base and wall were subsequently found, but not enough for anything more than a partial reconstruction. The width of the base was 5 inches externally. The mouth was about 20 inches in diameter and the height was between 20 and 21 inches (50 by 53·5 cm.). The thickness of the base was about 1 inch; the walls were very even and only ½ inch in thickness, and even less at the neck (12·5 and 10 mm.).

To build up so large a vessel with a heavy brim upon so small a base required no little skill. In this case the walls were constructed in tiers 2 inches high, each band being allowed to harden and stiffen before the next was applied (fig. 5). The edges were united by a tongue-and-groove joint, each portion being moulded on the thinned edge of that below.[1] The whole surface was covered with a layer of fine levigated clay, and a smooth finish was thus obtained. Firing was carried out as carefully

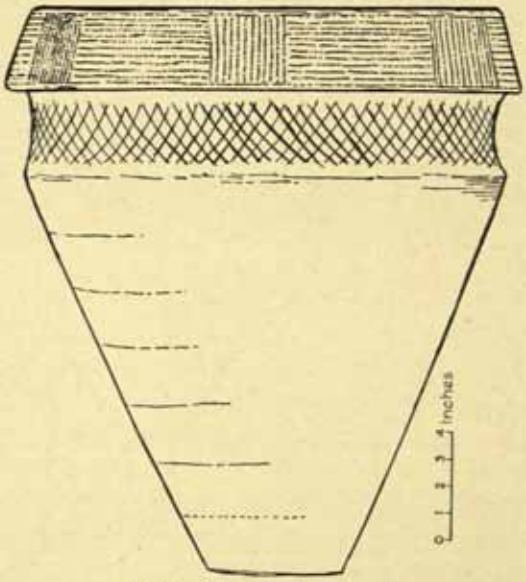


Fig. 4. Urn No. I. restored.

as manufacture. The vessel was burned evenly to a light red on the outside. The inside was also coated with a slip of fine clay which is more ochreous in colour. The clay of which the urn was constructed contains 20 to 30 per cent. of selected fragmental material, the chief constituent being a hard light-blue grit in chips of $\frac{1}{4}$ inch diameter or thereabout.

The inner side of the wall at the mouth of the urn is bevelled away for a thumb's breadth, so that the actual rim is only $\frac{3}{8}$ inch (9 mm.) thick. On the outer side the mouth is surrounded by a flat collar $3\frac{1}{8}$ inches (80 mm.) wide, which projects downwards and outwards (fig. 5).

The lower edge of the collar is undercut, so that the thickness is

[1] Dr Graham Callander has recorded instances of urn building in tiers in *Proc. Soc. Ant. Scot.*, vol. lxiv. p. 165.

here, at the concave neck, reduced to $\frac{3}{8}$ inch, from a thickness at the lower edge of the collar of $1\frac{1}{4}$ inch (from 32 to 10 mm.).

It is difficult to understand the reason for modification in form of the lip of the urn. The bevel is probably derived from the check on

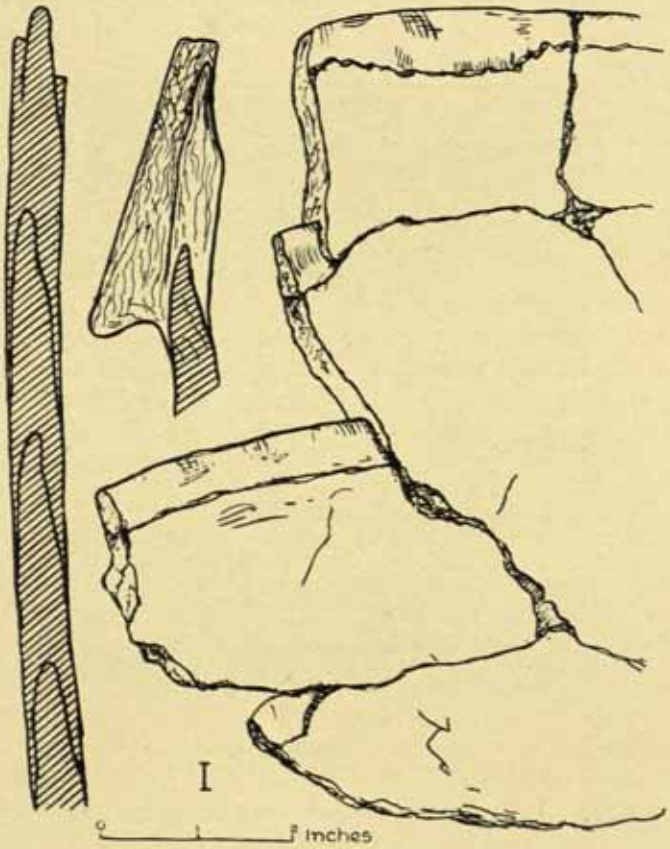


Fig. 5. Wall of Urn No. I.

the inner part of the edge of some urns, which looks as if it were intended to hold a discoid cover (fig. 10).

As a matter of fact, in Urn I. the modification of the edge seems to have been obtained as a direct result of structural methods. Some broken fragments show that the collar was composed of two layers—the inner one is the same style as the rest of the wall—$\frac{1}{2}$ inch thick with a projecting tongue on the top. The outer layer of the collar is built

against the inner one, projecting only $\frac{1}{4}$ inch above it to form the rim, so that the inner surface of the tongue is left exposed as the bevel (fig. 5). The decoration of the upper part of this vessel is rather more elaborate than usual. On the bevelled part of the inside of the mouth is a series of obtuse triangles, incised and shaded with oblique lines. A small zig-zag pattern is traced round the top edge. The collar has a chequer

Fig. 6. Urn No. X.

pattern of impressed cord in alternating horizontal and vertical series, and round the neck two sets of incised oblique lines intersect so as to produce a diamond or lattice pattern.

The bone fragments which were scattered through the soil-heap with bits of this urn were all white and well calcined, but were fragmentary and warped. No pieces were found which were non-human. The whiteness of the bone indicates that they were separated from the ash and prepared for burial with the same care as was exercised in the undisturbed burial described below (No. XII.).

Number X.—The urn which most closely resembles I., and which belongs to the same period, is X. (fig. 6).

Several fragments were found in December 1931 in the course of a search for missing parts of Urn I. Unlike the pieces of I., which still look fresh and clean, the inner surface of X. is black and shows a greasy streak on scratching. The discoloration extends through about two-thirds of the thickness of the wall. Externally the colour is dark brown. The blackness is due to the carbonisation of some organic constituent, such as blood, used in manufacture.

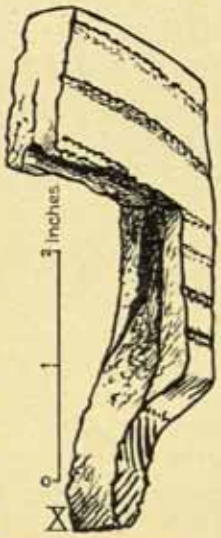


Fig. 7. Fragment of Urn No. X.

Early in 1932 a small scrap on a waste-heap led to the recovery of the greater part of the urn. More than sixty pieces were found in a compact mass, along with a quantity of bone fragments, just as they had been tipped out of the barrow by the labourer. It was possible to unite all the pieces found, so that about two-thirds of the urn was rebuilt and a clay base was then added. The wall is about $\frac{1}{2}$ inch (12·7 mm.) thick. There is no indication of segmentation except in the upper part. After completion as far as the top of the neck, the wall was thinned away to form a tongue 2 inches high, and on this the collar was built up (fig. 7). This vessel is smaller than Urn I., but the walls are about the same thickness. The height is $11\frac{1}{2}$ inches, width $11\frac{3}{4}$ inches (29 to 30 mm.). The top edge or rim is flat and carries a string pattern. There is no special moulding of the lip or pattern on the internal surface. On the external surface the collar does not project so far, and is not so undercut as Urn I., but it has the same fine finish and is decorated with six horizontal impressions of a looped cord. Round the neck is an incised double herring-bone pattern. Among the incinerated fragments of human bones which the urn contained were a number of bits of ox bone which are pieces of some kind of spatulate implement, but it is incomplete.

Number XII.—This urn was found on 2nd July 1932 (fig. 8). It was about 5 feet north of VII. The pit in which it was buried was rather deeper than the others, so that it had escaped damage during agricultural operations and was not exposed when the top soil of 18 inches was removed down to the uppermost layer of fine yellow sand.

On that day everything near the edge of the pit was covered with a uniform layer of soft blown sand, unpleasant to work amongst; but some trial scrapings revealed a patch of dark soil, oval in shape and

measuring about 4 feet by 2 feet. This was compacted, fine, blackish sand pressed firmly together, so that it could be lifted out in lumps. The only stones present were one or two broken bits of sandstone and schist, a wedge-shaped bit of andesite (apparently a working tool, as it was coated with clay), and some broken fragments that proved to be bits of the urn wall. The most interesting thing was a part of the occipital bone of a pig, showing one condyle. It was close to the urn, near the bottom of the pit.

The circular base of the urn was revealed on removing about 6 inches of black earth towards one end of the pit. It was undamaged, a very pleasant sight. When the black earth was removed from around the urn it was seen that only one-half of the pit was excavated. In fig. 2 the trowel is sticking in the dark soil not yet removed. One hoped that there was another urn, but nothing was found in that (the east) half. It seems probable that the grave was enlarged so that it might contain all the fine material, bone-dust and charcoal, from the cremation, for the bones in the urn were all white and clean, and lay between layers of clean red sand (fig. 3).

When the urn was cleared all round it was apparent that the lower edge, the mouth of the inverted vessel, was irregular, and one or two cracks ran along the side wall.

An attempt to lift the urn and its contents complete by sliding a thin board underneath was not persisted in, as it was obvious that any upward pressure on the contents would open the cracks. So the urn was enveloped in cotton bandages. As each successive turn came down to the edge it was taken underneath as a chord for about 1 foot, then applied to the surface of the wall again to make another circuit a few inches from the last. Four or five loops were tied on convenient chords, long enough to reach the top, *i.e.* the narrow base, and when the loops were gathered together the vessel was lifted with complete safety on to a wooden tray. The contents, clean sand and bones, lay in a heap, contrasting with the black packing in which the urn was buried. The cancellous bone looked remarkably fresh. All the large bones seemed purposely broken, none of the pieces being more than 3 inches or so in length.

(It is interesting to note that the Sacrum was so called on account of its supposed resistance to the forces of disintegration after cremation or burial; but its fragments are not the most easily recognised in these burials. It was the key-bone round which the others would gather at the Resurrection.)

The only "foreign body" present was a flake (M. 478) of dark unburnt

flint with a slight patina, no more than a dulling of the surface. It is the base of a flake about 1 inch in width, showing secondary chipping down one edge, and is broken across obliquely. Fig. 2 shows the urn *in situ*.

This urn (XII., fig. 8) was a great disappointment. The whole of the upper part above the shoulder had broken away before interment, and no fragment of the decorated part of this urn has, so far, been found.

Fig. 8. Urn No. XII.

It is, or was, a large urn. The walls are well made and smoothly finished. The base is 5 inches (12·7 cm.) in diameter, and the wall 15 inches (38 cm.) high vertically. The original height would be about 23 inches (58 cm.). The width of the top is 15 inches (below the shoulder).

It seems to have been the same type as Urns I. and X. The wall is stained black internally for about half the thickness. The outer part is ochreous in colour.

Number III.—This is an interesting urn of smaller size than the others of its type (fig. 9). It was found in fragments at the same time as II. and close to that urn. Nearly the whole was recovered, so that it was easily restored. It does not appear to have been associated with any bones when found. The surface is rather rough—it has not quite the

same smooth finish—but is well made, and was burnt to a bright red, more ochreous internally.

It measures $8\frac{1}{4}$ inches (21 cm.) in height, and is $6\frac{3}{4}$ inches (17 cm.) across the mouth, with a maximum width at the lower edge of the collar of $7\frac{1}{2}$ inches (19 cm.).

Fig. 9. Urn No. III.

The pattern is formed by comb impressions—chevron round the collar and chequer round the neck.

The Urn II. was found on 15th September 1931. Mr Spence was on the look-out for urns after the discovery of fragments of I., and immediately sent word to Major J. Edington Aitken at Guardbridge. The inverted urn was carefully uncovered, but photographs of it *in situ* were not successful on account of heavy rain.

An attempt was made to lift it, but it immediately collapsed. Its position was on the very edge of the sand-pit and it might have slipped down at any moment. The foothold was also precarious. When it collapsed a portion fell down the face of the pit, but all the fragments

were placed in boxes and it was eventually possible to rebuild the whole vessel except part of one side.

(Many, probably most, urns are broken when found. The discoloured and muddy bits do not look very promising, and too often it is assumed that the vessel is irreparable. It is not a difficult task, even for an amateur, to restore a broken vessel, provided it has not actually crumbled

Fig. 10. Urn No. II.

down. The result may not be very satisfactory perhaps, but it will show the general character and period of the vessel, which would otherwise be irrecoverably lost. Even if it is not possible to undertake immediate reconstruction, the parts should be rinsed to remove sand, but not scrubbed. While still damp the edges should be coated with mucilage, to which a little formalin has been added, to prevent crumbling.)

This is a large and heavy urn, 17½ inches high by 15½ inches wide (44·5 by 39·4 cm.). The base is 5 inches in diameter.

In general form it resembles the first described, but is thicker and coarser and is blackened internally. The lip of the urn is black, and round the inner edge a step or check is hollowed out as though to receive a

circular disc or cover. The collar is 4 inches deep and bears a pattern of triangles outlined and shaded by the impress of a comb-like implement. The collar projects outwards, and the under surface of its lower edge is nearly horizontal and about 1 inch wide. There is no other ornament on the urn beyond the band round the collar (fig. 10).

This urn contained white incinerated bone fragments mixed with dark sand. Major J. E. Aitken washed out the finer material, and the bones were seen to be in a very fragmentary condition, so that one suspects that they had been deliberately broken after burning. They

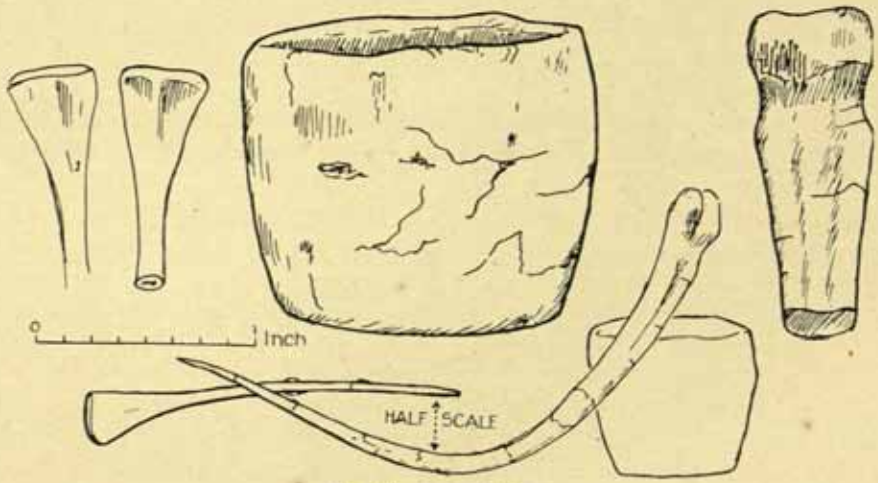


Fig. 11. Cup and pins.

are all very much twisted by heat, and any reconstruction would be useless if it were possible. Some of the bones show rheumatoid changes —for example, the vertebral bodies.

A small urn of clay, a little vessel no bigger than an egg-cup, $1\frac{1}{2}$ inch (38 mm.) wide and $1\frac{1}{4}$ inch (31 mm.) high with a wall $\frac{1}{4}$ inch (6 mm.) thick, was among the bones. This little cup is of a plain rounded shape without ornament (fig. 11). Two bone pins and an incinerated flake of flint were also found. The larger pin, $6\frac{3}{4}$ inches (171 mm.) long, was broken into a number of fragments. These looked like broken pipe-stem, and were picked out as non-human from among the bones. It was fortunately possible to find every piece. The pin is bent by heat and is made of hard bone, flattened and grooved at the head, $\frac{5}{8}$ inch (15 mm.) wide. The other bone is apparently the fibula of a bird, at present unidentified. It is $3\frac{1}{2}$ inches (89 mm.) long and shows droplets

of slag adhering to the surface. Though not, of course, identical, it is not unlike the small companion bone of the familiar drumstick of a fowl.

Urn II*a*.—Some fragments of an urn were subsequently found which was very like this one (II.), except that the pattern had been impressed by a different implement.

Fig. 17 is part of a small urn with incised pattern (Urn V.).

Implements or other pieces of non-human bone do not seem to have been recorded very often among the contents of cinerary urns—possibly as a result of incomplete examination. Sir A. Mitchell [1] reported a worked bone found in an urn near Murthly as the first record of such an inclusion. Pins should occur fairly frequently, but would be very easily missed if broken up. The bits are not unlike shafts of small bones, but have no medullary cavity.

On a paper upon seventy-four urns found at Balbirnie and elsewhere in Fifeshire,[2] by Dr Anderson, seventy-three are said to have contained nothing but burnt bones. One feels sure that a more careful examination of the contents of urns would be worth the trouble. The solitary urn which was noted as containing implements was one from St Andrews with two bronze knives (razors).

Burials VII., VIII., IX.—On 14th June 1932 three burials were laid bare during removal of the soil. They were close together and were similar in character. The bones, burnt and broken in small pieces, had been buried in pits, and were mixed with bits of charcoal and black soil.

In Pit VII. a number of broken shards of a small urn were found. A labourer had removed the contents of this pit, but a large part was recovered from the dump. A few of the urn fragments show fresh breaks, but most of the edges are weathered and stained—old fractures that date from the time of the burial, if not earlier. The decoration is rougher than on the cinerary urns, the muddy string impression, not very distinct on the rough clay, being very different from the fine cord impressions on the prepared surface of the other urns. It is, as restored, 6 inches wide and 7 inches high. It seems to be too small to have contained the cremated bones of an adult (fig. 12). The associated bones were those of an elderly person.

Number VIII. was 6 feet east of VII. and quite close to IX.

The central burial of this group of three was in some respects the most interesting. A cup-shaped hollow 18 inches in diameter and 3 feet below the grass was filled to a depth of about 6 inches with a black mass

[1] *Proc. Soc. Ant. Scot.*, vol. ix. p. 269.
[2] *Proc. Soc. Ant. Scot.*, vol. xiii. p. 107.

of charcoal and bone fragments. There was no trace of an urn. The only "foreign bodies" present were a flake of calcined flint approximately 1 inch in diameter, and a clay disc $1\frac{3}{8}$ inch by $\frac{3}{8}$ inch. The latter is smooth and nicely made, like the better class of urn. One would like to regard it as a toy or a token. It is probably a core for a button, for a garment only worn once. Some other material would be more satisfactory for everyday use.

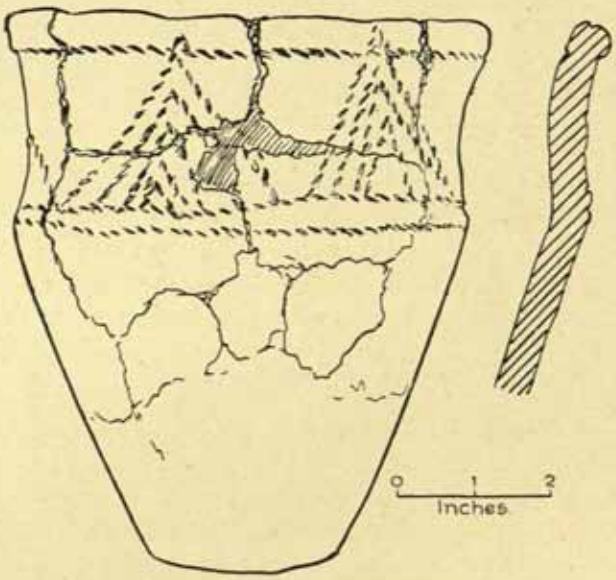


Fig. 12. Urn with Burial VII.

The hollow containing the ashes had been excavated in the topmost layer of the sand, which was here hardened and stained bright yellow by bog-iron.

Round the central mass of charcoal and bones, and separated from it by a few inches up to 1 foot or so of clean sand, there were about twenty black patches irregularly arranged, varying in shape and size from 1 inch to 5 inches in diameter (fig. 13). These satellite patches, if one might call them so, diminished in size while retaining more or less the same shape as one followed them downwards through the sand by serial sections. They all disappeared at the level of the bottom of the pit except one or two of the larger ones, which extended to a few inches deeper. The small ones did not penetrate so far.

They appear to have been holes made by roughly sharpened stakes.

They may have been post-holes for some kind of superstructure; but that is improbable, as they were filled with a fine and very black earth mixed with small particles of bone. It is not clear how this packing got in, for stakes, even if charred, could not leave a residue of fine black soil and bone dust. They appear to have been holes dibbled by sharpened sticks into which the finer dust of the cremation was poured.

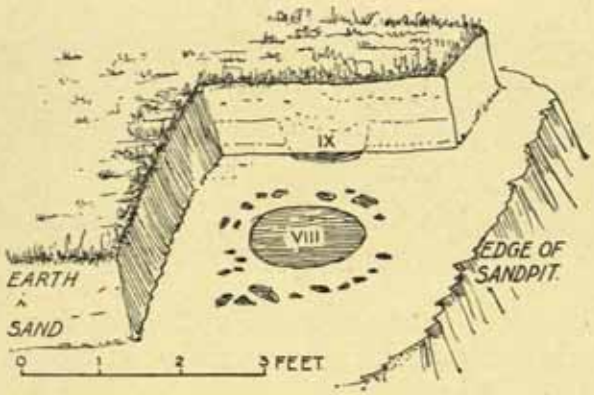


Fig. 13. Burials VIII. and IX.

The fence-like arrangement of the little pits suggests the placing of ashes of burnt-offerings round.

It seems most probable that pains were taken to sweep up and bury even the fine dust from the cremation floor—a tribute by individual mourners in either case.

A quotation from Sir Thomas Browne's *Hydriotaphia, Urn Burial* (Norwich, 1658), may not be inappropriate in this connection. "We conceive not these urns to have descended thus naked as they appear, or to have entered their graves without the old habit of flowers."

Somewhat similar marks were found round an urn burial at Gilchorn, Arbroath, under a cairn.

Number IX.—At this place the overlying soil is rather deeper than in the rest of the sand-pit. It is divided into three fairly distinct beds, each about 9 inches thick, between the grass and the iron-stained surface of the sand. In a vertical section one could observe that the light grey soil beneath the grass was undisturbed, but the deeper layers were cut through by a small pit 18 inches in diameter. In the upper part the sides had fallen in, but the bottom of the pit, in firm sand, was clean cut with smooth surfaces (fig. 13).

There were cloudy stains in the sand below the pit, the bottom of

which was covered with fine dark sand to a depth of 2 inches. Above that bones and charcoal formed a mass about 6 inches thick, which was compact and could be lifted out in lumps. The rest of the hole was filled with light sand. There was no trace of flint or pottery. It was not quite so deep as Pit VIII. and separated by not more than 1 foot; but there was no indication of stake-holes around. Nothing but human

Fig. 14. Base of Urn No. XI. showing impressions of grain. (¼.)

bones and bits of charcoal up to 1½ inch in length was found after the repeated washings that were required to remove the soot-like packing.

One is struck by the preservation of the bones in these cremations, where so slight a protection has been given, as compared with the rapid disintegration which is the general rule. Not only is all the organic matter removed by burning, but there is a hardening and consolidation of the bony substance by some degree of fusion. The resultant shrinkage of the bone by splitting and twisting is obvious in most cases, and sometimes one can see small drops of vitrified material on the bone surface. The cracks on some of the long bones are quite regular, so disposed as to produce a repeated cone and socket arrangement. A piece of bone separated at one of these cracks has the appearance of having been artificially ground to a conical form.

One supposes that the bone has been split along the lines of growth; but that, like most other speculations in archæology, is wrong. The uniform structure of a long bone and the even application of heat has led to a uniform shrinking in certain directions, and so to a regular pattern of cracking.

Even a light summer breeze is sufficient to cast a continuous spray of fine sand up over the edge of the pit, so that a prepared surface is obliterated in a few seconds, and it was not possible to obtain photographs of these interesting burials; but the figures are from measured sketches made on the spot.

Number XI. is part of an urn base which was 8 inches in diameter. The comparatively large size of the base and the rough finish indicate that it is part of an urn similar to Number IV.

The fragment measures $5\frac{1}{2}$ by 3 by $\frac{3}{4}$ inch (140 by 76 by 19 mm.). The internal surface is not smooth, but shows the impression of the maker's fingers.

The under surface is flat and is particularly interesting, as it shows impressions of grains of wheat (fig. 14). Similar perimorphs of wheat seem to be not uncommon—at least not so rare as one would expect a purely accidental impression to be. No marks of grain have been noticed in the substance of the clay, such as are found in Roman (Castor) ware.

Number IV. is a wide-based rough-looking urn. In material it is similar to the basal fragment XI. It was at the west end of the pit, some distance from the others. It was very near the surface, the mouth of the inverted vessel being only 18 inches from the grass. The base was lost. It contained blackened bones and charcoal, but nothing else.

In spite of the irregular surface one can recognise the impressions of muddy fingers. The ornament, if one may call it so, consists of a circular line scratched below the rim, and U-shaped marks crossing it at intervals. (fig. 15). The walls expand upwards fairly evenly until near the top, where they tend a little inwards. There are no projecting ridges. It is probably of a later date than the cinerary urns. The height is about 9 inches, and the width $8\frac{1}{2}$ inches across the mouth.

The Burning.—It is apparent from the thoroughness of the calcination of the bones that cremation in these cases was by no means a haphazard process, but was carried out in a regular and deliberate manner. The clean whiteness, the twisting and shrinkage, often with evidence of partial vitrification of the surface of the bones, along with the complete oxidation of the fuel, indicates the care with which a high temperature was maintained throughout the process. The sudden application

of heat, as in modern cremation, shatters hard bone by the generation of steam in the innumerable minute canals by which the bone is traversed.

Fragments of charcoal are found scattered about through the soil over the whole area. The urn contents might be quite free from charcoal, but in three interments, two without urns and one with the small

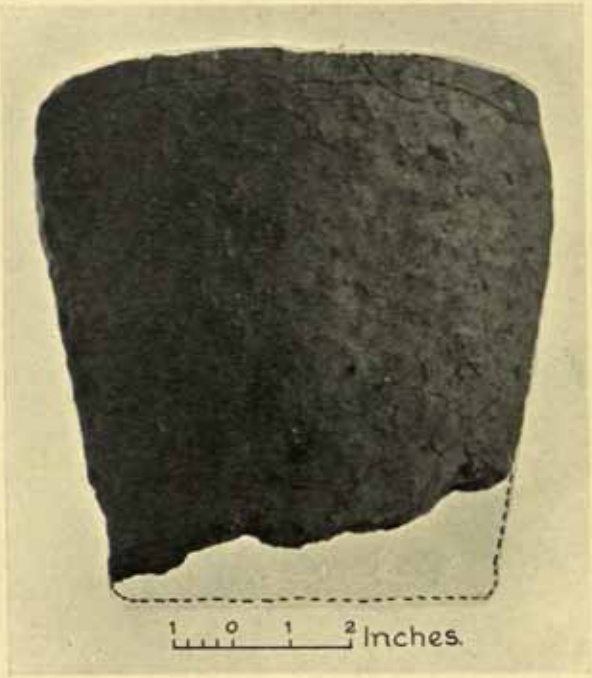


Fig. 15. Urn No. IV.

urn, the bones lay in a black carbonaceous layer with charcoal at the bottom of the pit. The actual fire covered several square yards, and after the bones and ashes were raked up a greasy black stain would mark the site.[1]

Here the cremation floor was made of small flat stones. There is no evidence of an artificial draught; one could scarcely hope for such. Cuts in the sand may have acted as wind channels.

Salts derived from the body, bone constituents, ash from the fuel, and sand, united at times to form a glassy slag. This ran down into the

[1] During the Great War the official allowance of wood-fuel for the cremation of Indian soldiers was 1 ton.

crevices of the floor and hardened as a greenish glass full of white particles of bone dust. Several flat stones were found which were vitrified at the edges and showed adherent slag. No undisturbed floor was found.

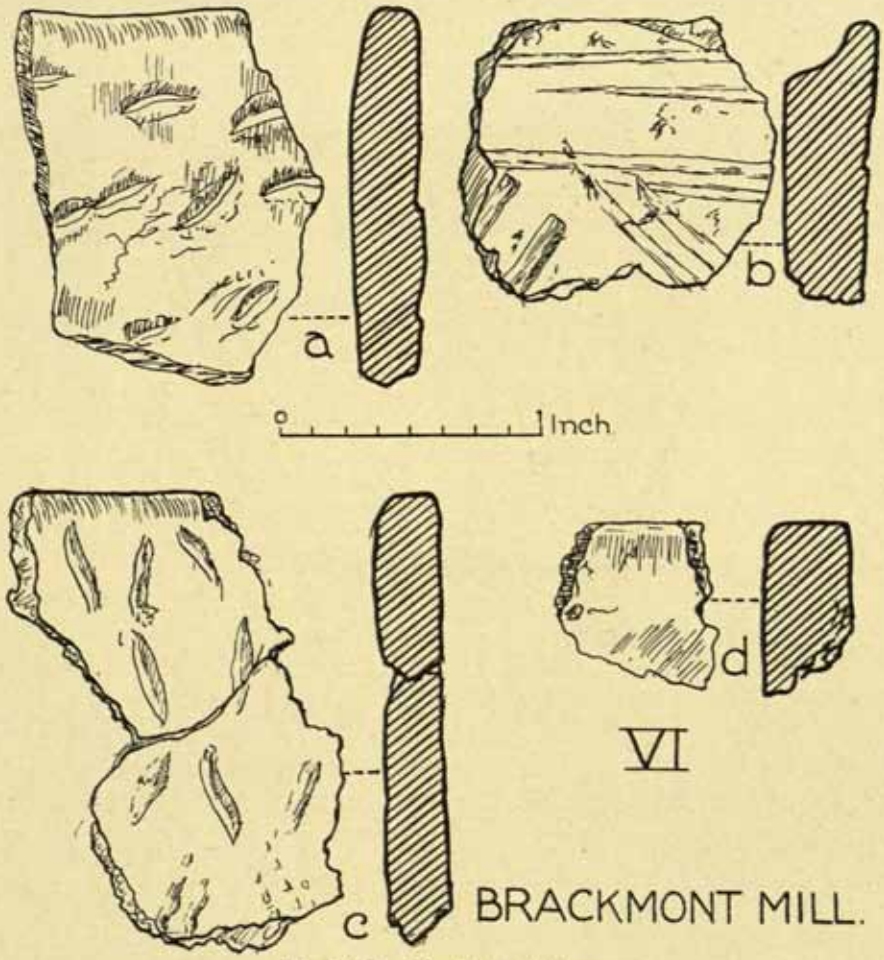


Fig. 16. Urn No. VI. and others.

In association with the bones in one burial were bits of a peculiar spongy slag. Why it remained spongy—like "petrified moss" in appearance—and did not fuse, is not clear. On the waste-heaps pieces of small vessels were found. Two of the bits show a nail pattern, and one has a part of a chevron pattern produced by the application of a straight edge. One shows no pattern, it is only a fragment of rim (fig. 16).

These are all quite little bits, and there is nothing to show whether they were associated with burials. One or two other fragments seem to be from vessels that broke in the making. Fig. 17 is part of the brim of a very small urn. The collar is only $1\frac{1}{4}$ inch in depth (32 mm.).

Number XIII.—Some small pieces, with one larger which shows the height and size, of a small cup have been found lately. The cup, 4 inches by $2\frac{1}{2}$ inches (102 by 63 mm.), is thin-walled and quite plain, with no decoration. The base is broad and flat, and the walls, nearly

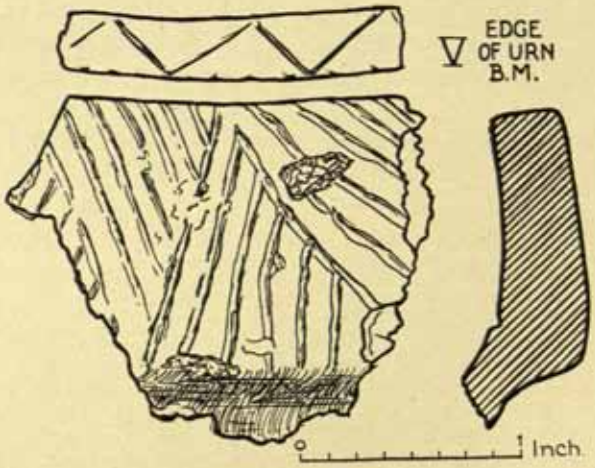


Fig. 17. Urn No. V.

vertical, incline inwards towards the top, where they are thinned away to a narrow lip.

This probably belongs to the "incense cup" group of vessels which are usually found with the bones inside a larger urn. In the sand adhering to the concavity of the largest bit were some carbonised seeds.

Fig. 18 shows the cup partly restored. It is of a simple shape. (Starting from a ball of tempered clay, with the thumb inside and the fingers outside, it took a complete amateur only half an hour to produce a tolerably accurate copy.)

Only one bit of bronze has turned up—a small square portion of flat plate that has been broken up for the crucible. It has a thick patina with impressions of straws. A clear portion on one side shows a finished surface, with some very small sigmoid cuts in rows. The edges have been cut by a chisel and then broken. They vary in length, a little over and under $\frac{7}{10}$ inch.

A number of rough stone implements have been noticed. The commonest, which show most obviously their character as artifacts, are scrapers of felsite. These have been struck from small boulders of felsite which are common in glacial gravels. They are generally 3 or 4 inches (75 to 100 mm.) in diameter. The fractured surface is stained and weathered. The edge is naturally rough; but one sector, often a straight part, will be found blunted and smooth to the touch as the result of use.

Besides the burnt and broken flints found in the burials, about a

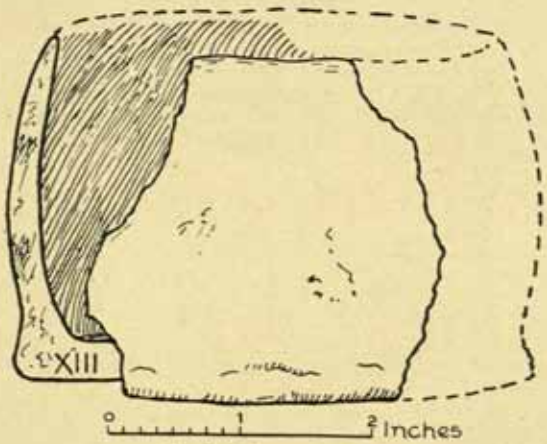


Fig. 18. Incense-cup Urn.

score of flakes and scrapers of flint or agate have been picked up on the site.

Agate, including chalcedony and carnelian, is tolerably abundant in the eastern part of the Ochils, and one finds that quite a large proportion of the smaller implements in this neighbourhood and Tents Muir is made of these forms of silica.

Agates up to 6 inches or more in diameter and weighing several pounds are to be found *in situ* on Lucklaw Hill close by.

The largest nodule of (imported) flint found here (Brackmont Mill) is a piece of tabular grey-yellow flint about 3 inches in diameter.

Discarded splinters and flakes are, of course, much more numerous than residual cores. Indeed, with much valuable material there might be no "core".

The commonest worked flake is a scraper. A small implement of this nature of bright carnelian is included in fig. 19.

A well-finished scraper of brown flint with an arrow point and a knife of grey flint are figured (fig. 19). They all show the same technique of skilful pressure-flaking, by means of which thin chips like shavings are removed.

One cannot but regret that the burial vessels, even under such favourable conditions, are so frequently, almost invariably, broken; but there is so little to indicate the position of urns, and they are so near the surface, cracked and penetrated by root-growth, that they are apt to fall to pieces on exposure, even without the assistance of a shovel.

In these urns the clay contains a definite proportion of broken stone,

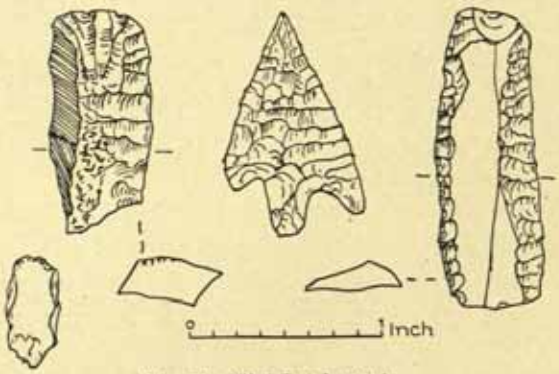


Fig. 19. Flint Implements.

as already mentioned, and firing was neither so intense nor prolonged as is the present practice.

The presence of unoxidised carbon in the walls of the larger urns indicates that they were fired either in closed pits or in covered furnaces such as charcoal-burners use. As already suggested, the distribution of the staining is such as one could only find if some organic material had been incorporated in the clay during manufacture.

Ice is the great enemy of such urns. Exposure of a vessel to a winter's frost would only leave a crumbling heap. This may account for the disappearance of the greater part of the walls of vessels of which only a few scraps are found. It also seems to be the case that winters, since the Bronze Age, have not been very much more "old-fashioned" than at present—that is to say, that frost may have been severe enough to destroy all bits of urns broken or brought near the surface by one agency or another, but that it has never penetrated more than 9 inches, below which urn walls were found intact. The light soil would carry, naturally, grass and a thin scrub of bushes, broom or whin.

The difficulty of recognising stratification at many parts of the pit may be partly accounted for by the fact that the site was planted with trees some time in the eighteenth century. An Itinerary of 1821 describes Brackmont Mill as "an old residence situated in a well-wooded park."

All the urns and relics found have been placed under the care of St Andrews Prehistorians, and are at present exhibited, by the courtesy of Professor D'Arcy Thomson, in the museum of the Bute Medical Buildings.

I have received much assistance and valuable help from Professor Childe.

I am also much indebted to Professor Waterston, St Andrews, for his assistance and advice; to Major J. E. Aitken, Guardbridge, for his help in many ways; and to Mr Leslie Spence for the privilege of digging where and when one liked, and for his free consent to the removal of all the material found to St Andrews.

NOTE A.—Whatever the origin—whether the pattern represents the necklace on a conventional, stylised, human figure, or whether the agreeable effect produced by the impression of the binding cords or investing basket-work was reproduced for adornment only—it is not without interest that the olive oil of Lucca is to-day marketed in bottles with a protecting sheath very like that suggested by the urn pattern—used and discarded so long ago. The lower half of the bottle is contained in a little basket, round the base of which the fibre is twisted into knots that form a ring of support. The basket is kept in place by an open network of twisted string, in two chevron bands above the shoulder of the flask. To the topmost circular cord is attached a loop for suspension. This neat and simple arrangement for protection and support has, no doubt, a long pedigree; but one may not trace it back to the Bronze Age with any more confidence than one would track the "soda-water bottle" to its unstable analogues in the Neolithic.

It may be assumed from the invariable lack of personal record, and burial of all the dust, as we have seen in the case of Urn XII., that the desire of these people was to tidy up and put away the dead, leaving nothing for the horrible feasting of the dog or maggot. They can have had little idea, as indeed Sir Thomas Browne remarked long ago, of the permanence of these humble monuments. Thus the upturned vessel becomes a little house to protect the bones from prowling exhumer. The broken flint is a survival of a more ancient ritual.

NOTE B.—If it had not been for Professor Gordon Childe one might have fallen into most grievous errors. He has recently (February 1936) pointed out that a number of specimens, in one of the Tents Muir collections acquired by St Andrews Prehistorians, are of undoubted Tardenoisian character. This is rather upsetting. Changes of level must have coincided with, or followed closely on the final stages of, glaciation, and the 25-foot Raised Beach must be much older than one imagined; or, on the other hand, Tardenoisian man must have survived in some areas up till, or almost up till, the invasion of the "Beaker Folk."

NOTE C.—In April 1937 Mr Spence noticed some irregularities on the surface of the sand, as the soil was removed. These are at the most westerly extension of the pit, now 150 yards from the house. The soil is thin here, 12 to 15 inches, and the surface is sloping down to a little dry hollow which probably had a spring and a small tributary to the burn before drainage.

The best-defined depression is circular, 10 feet in diameter, with steep edges. It is 15 inches deep. On the floor, west of the centre, is a hearth of large stones set in clay and covered with black ash. This black stuff was washed and sifted and has yielded carbonised grains of wheat. A core of flint was also found, and it is hoped that more material may turn up which will enable one to fix a date for these dwellings.

II.

A STONE INDUSTRY, POTSHERDS, AND A BRONZE PIN FROM VALTOS, UIG, LEWIS. By A. D. LACAILLE, F.S.A.Scot.

Before setting out on a tour of the Outer Hebrides in the spring of 1935 I had a conversation with Dr J. Graham Callander, in the course of which I expressed the desire of furthering my researches in the stone industries of the more remote regions having no native flint supply. Dr Callander recalled that when serving on the Royal Commission on Ancient Monuments in the Outer Hebrides in 1914 he had recorded prehistoric sites at Valtos, not far from Gallan Head, Lewis.[1] Near these he had picked up some pieces of quartz, which he was convinced had been intentionally struck. As Valtos was on the itinerary mapped out, he suggested that I might advantageously investigate the possibilities the locality offered.

The collection of "black houses" and more modern buildings forming the small township of Valtos, in Uig parish, is mainly situated on the high ground above the kyles separating the mainland of Lewis from the island of Pabay More (Pabaidh Mhor), about a mile from where West Loch Roag opens into the Atlantic Ocean. Farther on, to the east, a cluster of crofts and black houses constitutes the hamlet of Kneep, separated from the Sands of Berie (Traigh na Beiridh), extending eastward for nearly 1½ mile, by a rocky headland rising about 50 feet above the sea and joined by an isthmian ridge to the hilly ground on the south. On the south, over 200 yards from low-water mark, the sand-dunes, a few feet above sea-level, have become more or less stabilised by a growth of coarse grass. This vegetation, by arresting the movement of the sand, formerly wind-blown, has been responsible for the permanent obliteration of many ancient dwelling-sites. Nevertheless, in some hollows in the sand-hills a number of ruinous hut-circles were distinguishable, the majority robbed of the more portable stones.

In a depression sheltered from northerly winds on the southern slope of the rocky headland near Kneep, the western extremity of Traigh na Beiridh, and about 30 feet above the level of the sea, there exist several

[1] *Historical Monuments (Scotland) Commission, Ninth Report, The Outer Hebrides, Skye, and the Small Isles*, Edinburgh, 1928, p. 29.

kitchen-middens and dwelling-sites described in the inventory of the Royal Commission.[1] These were the object of my inspection.

Fig. 1. Hut-circle; Berie Sands.

Not only were weather conditions entirely favourable when the place was visited, but the propitious wind, which had prevailed for several days before my prolonged scrutiny, continued during the course

Fig. 2. Hut-circle and Kitchen-middens; Berie Sands.

of my investigations. Thus I had the advantage of an excellent exposure of the middens and hut-sites. The latter, of which three were still clearly discernible, proved to be elliptical and circular, but the profusion

[1] *Loc. cit.*, No. 98.

of fair-sized and large stones scattered in restricted areas pointed to the fact that a greater number of habitations once occupied the sandy platform (figs. 1, 2, and 3). The convenience of such a quarry was probably not ignored by the crofters, although superstitious regard for the place now exists locally because graves have been accidentally opened. These burials probably post-date the abandonment of the dwellings. The fury of the waves in violent storms through the centuries has wrought havoc with the ruins. Whether the dislodgment of many of the stones was effected by natural agencies or otherwise, it speaks well for the hut-builders that so many of the boulders set up by them remain fast to this

Fig. 3. Hut-circle and Working-floor; Berie Sands.

day. Despite the considerable accumulation of sand it was ascertained that the stones *in situ* are mostly of large size.

The kitchen-middens, ruins of hut-circles, and narrow elliptical dwellings extend over an area approximately 75 by 30 yards, the longer axis of the settlement north and south. As on my first and prospecting visit a few days earlier I had secured pieces of worked quartz, I first concentrated on humanly struck specimens of this stone, obtaining several dozen. In places there lay considerable quantities of chippings indicating working-sites, but at one spot chiefly, near the middle of the assemblage of ruins and kitchen-middens, were concentrated the greatest number of struck pieces. Their abundance would suggest that here was the principal "floor" (fig. 3).

Numbers of pottery fragments were collected within and near the elliptical and best-preserved setting at the northern part of the settlement (fig. 1). Although the sherds are generally of small size, mostly

greatly weathered and acted upon by wind-blown sand, the nature of the ware is such that it can be more readily dated than the associated artifacts of stone. Failing controverting evidence, these relics must be considered as the products of the people who made the pottery. The unaltered state of the former, found in the same conditions as the latter, testifies to the more rapid alteration of the softer material.

Although the Valtos site yields much of archæological interest and scope for further research, the stone implements collected present features for close study of essentially technical nature. Remarks on the characteristics and peculiarities observed are advanced as a contribution to a neglected side of Scottish prehistory. No artifacts of flint were found nor was a single chip of this material recovered here. This was not surprising, as few flint implements have been discovered in the Outer Hebrides, but I was interested to observe that large pieces of gneissose and granitic stones had been flaked by man at this Loch Roag site. The coarse rock was apparently used only for large and rough tools, probably because quartz did not provide raw material of adequate size. On account of similarity of the rocks out of which they are made, these crude artifacts compare with many of the coarse stone implements found in such districts as the river-basins of the Pyrenees and the Meurthe-et-Moselle department. The handling of large numbers of stone implements from sites in Europe and other continents has proved invaluable for purposes of comparing the effects of various techniques.

The Stone Industry.

The vein-quartz of Valtos, while inferior to flint for the manufacture of implements, is not of the poor quality so often met with in localities where other varieties predominate. At Valtos the quartz is virtually granular and its cleavage approaches that of some gritty cherts, fine quartzite, or schistose grit. The implements show that percussion does not always produce these features noticeable in flint intentionally struck. Nevertheless, a large proportion of vein-quartz flakes of the West bear, if not a perfect part of a cone, at least a prominence not unlike the soft swelling seen on flint flakes detached from the cores by the use of a percussion instrument such as a wooden bar.

While numbers of the struck pieces possess features worthy of detailed comment, considerations of space restrict illustration to a series which embodies the salient characteristics of the Valtos quartz industry. The selection figured calls attention to the workmanship, and shows at the same time a few of the smaller and trimmed implements fashioned

in this native rock (fig. 4, Nos. 1–12). Typologically little can be inferred from this local industry, as it is seldom that surface-found artifacts of quartz can be positively assigned to a culture-phase. Here occur few implements of the ordinary conventional forms. Even conveniently shaped stones, rudely or elementarily trimmed, are uncommon. Instead, it is to be observed that as many of the implements consist of flakes—often dressed—obtained from cores, recourse was had to production by methods used elsewhere with better material.

No. 1 may be regarded as a good representative core, many similar examples of which have been noted in Scotland. The scars upon this specimen testify to the removal of fairly delicate flakes such as Nos. 2, 3, 4, and 5. Of these, Nos. 2 and 3 are plain, having been detached by the first blows dealt upon a nucleus or lump of quartz. The two flakes show a pronounced swelling under the point of impact. The cores themselves, from which these flakes were removed, would bear (as does the example, No. 1) hollows corresponding to the more or less conchoidal protuberances on the flakes. Quartz cores, whatever the culture, invariably show well-marked crenellations along the edges where struck.

Several minor facets or scars appear on No. 4, detached after the surface of the core had been subjected to further treatment. The example could have served as a tool without further trimming. None of the easily recognisable features of conchoidal fracture are present, the specimen affording an example of the erratic response of quartz, even of superior quality, to intentional blows. In Nos. 2 and 3, however, features of fracture resembling those inherent to flint exhibit themselves. No. 5, a triangular flake secondarily trimmed near the point, shows on the reverse a definite bulb of percussion, albeit low and diffused. In a foregoing paragraph reference was made to the paucity of implements obtained by trimming suitably shaped fragments, but one example, No. 6, may be illustrated. This consists of a tabular piece of quartz worked to shape by the removal of a few spalls by battering the edges. Similar rude tools of this elementary type have, of course, been found in different parts of Scotland. Generally these simple implements are of stones other than flint.

In No. 7, naturally triangular in section, the lower end bears a number of small facets in addition to the scars of delicate narrow flakes removed from one side. This specimen also shows signs of having been secondarily trimmed in places along the edges. No. 8, a knife, well worked to a sharp edge, now broken, with delicately faceted butt, might have been struck from a piece like No. 7. For an implement of quartz the workmanship is of high order. Scrapers of acceptably conventional

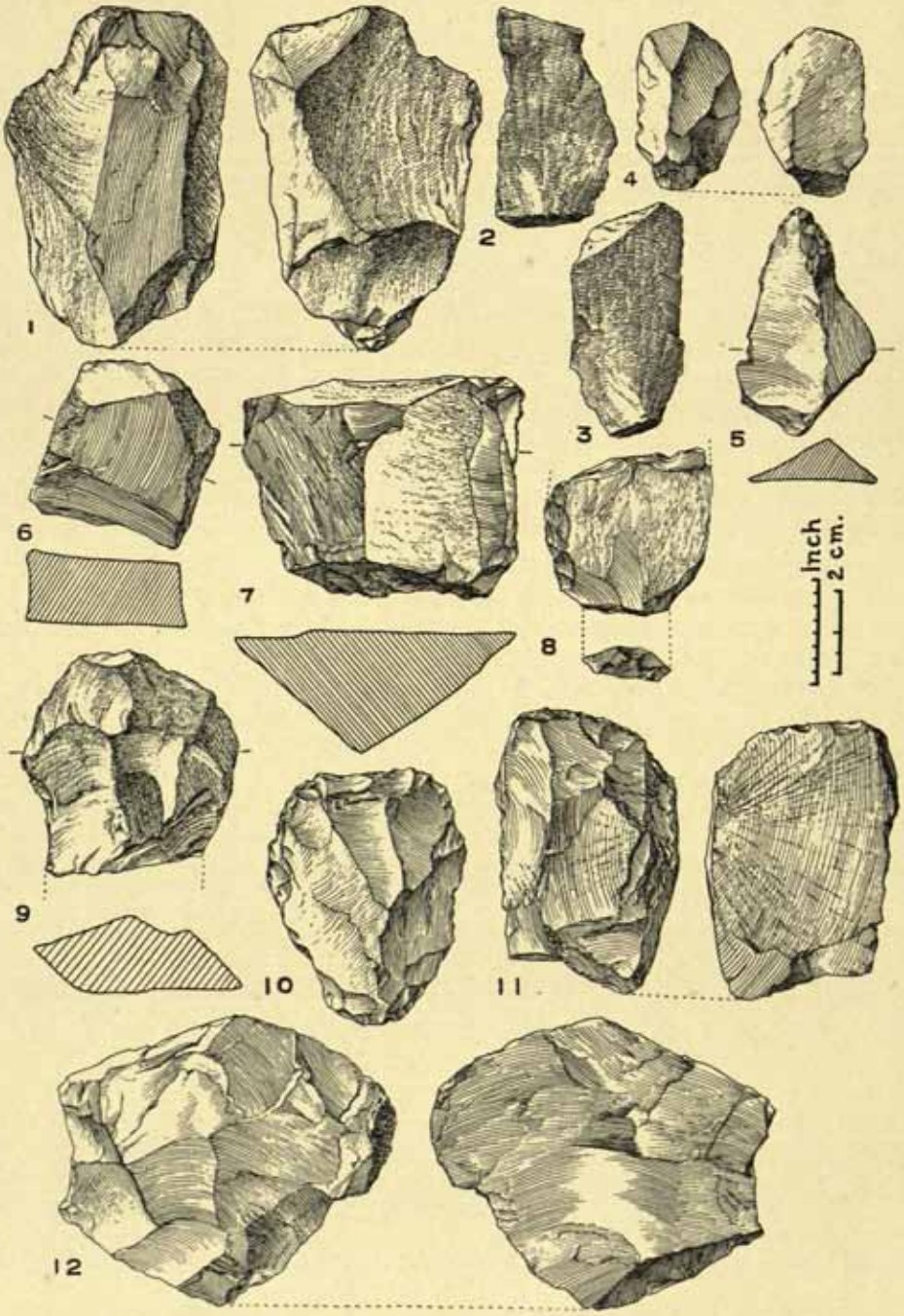


Fig. 4. Berie Sands: Quartz Industry.

forms are represented by Nos. 9 and 10. The first is squat and trimmed to shape by the removal of short, fairly wide flakes from both sides of the lower part, thus imparting a sharp edge to the tool, which bears a close resemblance to certain coarse scrapers, some still inserted in bone or antler holders. No. 10, of finer quartz, is an even better-finished scraper. Not only does its surface bear small facets of flaking, but the edge, horse-shoe in shape, has been secondarily trimmed. Of the series of quartzes, No. 11 is, no doubt, technologically the most interesting specimen as it consists of a worked piece from the uppermost portion of a core. The nether surface shows a concavity corresponding to the almost conchoidal swelling on the detached and vanished flake. As the crushed appearance of the surface on one side indicates, this was presumably removed by repeatedly striking the whole or almost complete nucleus upon an anvil. Similar signs may be observed on numbers of cores, pieces, cores or nodules of flint or of other material treated in like manner by man for the obtention of flakes.[1] The long edge opposite the abraded area and the oblique end have been so trimmed that the artifact affords an example of a side-and-end scraper, the end thin and sharp and the dressed longer lateral edge fairly steep. No. 12 is included on account of its exceptional dimensions, and for the fact that its upper surface is entirely flaked save for a very small portion at a corner which retains the cortex. Little distinguishes the bulbar face from that of a flint flake of good quality. The well-rounded swelling under the inclined and comparatively wide striking platform is pronounced, and the corner under the crust terminates in a sort of hinge. It is apparent that the core from which this large flake derives was a piece of no inconsiderable size, and the numerous and well-defined flake-scars testify to the quality of the raw material.

Materials identifiable in the representative artifacts now mentioned mostly comprise varieties of native foliated crystalline rocks. Acid-gneisses, coarse-grained and fine-grained, occur among the specimens. The appearance of some of the large flakes struck in these is pleasing by reason of the banding formed by the component minerals. It does not seem that the stone-knappers were able wholly to control the fracture of the more coarse-grained rocks. Still, these were capable of being split, and although the flakes obtained were irregular of edge, they were no doubt serviceable enough, and, while not lasting, they could easily be replaced.

Mr A. J. Macgregor, of the Geological Survey and Museum, South

[1] Notably in certain phases of the Chellean (Abbevillian), and, specially Clactonian, cultures, the techniques of which have been recaptured by the experiments of M. Léon Coutier. *Vide* recent references in *Bulletin de la Société Préhistorique Française*, and *infra*, pp. 287–8.

Kensington, to whom I am indebted for preparing microscopic sections from specimens submitted, informs me that among other rocks employed at Valtos are two grades of biotite-granite and mylonite.[1] The first of these, dark red of hue, severely crushed, was apparently favoured because its compactness allowed of some degree of control under working. The second, pale grey normal biotite-granite, seems to have been employed but sparingly at Valtos, and, as only a few artifacts struck in this rock were found, no really useful deduction can be made. One thick piece, however, presents interesting features of intentional fracture (fig. 6).

Judging from the numbers of struck fragments recovered, the rock which, after quartz, most appealed to the craftsmen whose artifacts are under examination was dark mylonite produced by the severe crushing and shearing of what was doubtless a granite.

Considering the character of the native rocks, the large artifacts are surprisingly well made, and the types which occur suggest employment for specific purposes dictated by local needs. The shaped implements are made of the close-grained and more compact rock from which are also derived numbers of large flake implements. These do not differ much from certain tools brought to light in Shetland by the excavations conducted by H.M. Office of Works under Dr A. O. Curle's direction.[2] The flake implements, and, indeed, the core-tools to be mentioned, are also like artifacts referred to as far back as 1867 by Mr Samuel Laing, who figured examples in a paper on the stone industries of Caithness brochs and other sites regarded as contemporary.[3] Professor V. Gordon Childe, in his recent work on Skara Brae, drew attention to the numbers of crude stone flakes yielded by this classic site.[4] For many years specimens from different parts of Scotland without a flint supply have been studied in respect of features of fracture; and artifacts of various sorts of rocks, ranging chronologically from the Lower Palæolithic to the Metal Ages, from English and Continental sites have provided so many valuable data for comparison. It may be added, too, that the products of modern primitive peoples, some recently exterminated, whose raw material for the making of everyday tools is often found to be rock of intractable nature, also furnish useful and interesting comparative sets.[5]

The dating of massive and rudely worked artifacts without knowledge of conditions of discovery or of associations must necessarily be conjectural, but the Valtos stone artifacts appear to present no

[1] Letter to the author, dated London, S.W. 7, 19th December 1936.

[2] Particularly those described in *Proc. Soc. Ant. Scot.*, vol. lxix. p. 96, and figured, p. 98.

[3] *Proc. Soc. Ant. Scot.*, vol. vii. pp. 73–9.

[4] *Skara Brae*, p. 114.

[5] *E.g.* Henry Balfour's "The Status of the Tasmanians among the Stone Age Peoples," Presidential Address for the year 1924, *Proc. Preh. Soc. of East Anglia*, vol. v. pt. i. pp. 1–15.

difficulty, and reasons are advanced for regarding the stone industries as belonging to a late prehistoric phase. It is held, however, that in working the native material, precisely the same means were employed as from the most remote antiquity in climatically favoured places until stone ceased everywhere to be of account for tool-making. Moreover, the evidence of handiwork expended upon the stone (which is believed to have been treated according to one of the most simple of the methods practised by prehistoric man) is precisely that discernible in localities where similar rocks supplied communities, whatever the cultural conditions wherein they lived.

On examining the Valtos artifacts of gneissose and granitic rocks it is seen that even the most rudimentary tools reveal a high standard of skill on the part of those who made them. Not only so, but one must recognise the artisans' knowledge of the peculiarities of the material employed. In no case did the workman deal a purposeless blow. Further, he so took advantage of the foliation, and sometimes even of an edge of natural origin, that an efficient implement was rapidly produced by the minimum of effort. It is not too much to say that each flake-scar and every flake afford scope for study.

The late Mr George Petrie's experiments in splitting pebbles of flagstone by dashing them against rocks gave flakes with sharp edges. But the simple process described by him,[1] while answering for the production of flakes, would not be a successful means of shaping implements in such materials as occur at Valtos.

On Nos. 1 and 2, fig. 5, and on some of the heavy flakes are borne unmistakable indications attesting that the anvil method of fracturing and detaching pieces was responsible for the shaping and removal of flakes. By this method the craftsman had considerable control over the finer stones. He struck the core or nodule at the appropriate angle on the edge of an anvil-stone. The edge or edges of each face of the lump operated upon received attention alternately, as prove the pronounced hollows of percussion evident in bifacial implements so fashioned. The earlier Chellean (Abbevillian) hand-axes of flint furnish the best examples of this particular technique; and similar tools, of this and other culture-phases, made of various materials, testify to the same practice. At this juncture it is relevant to mention that Clactonian flakes were obtained by the anvil technique, but the inclination of the striking platform and prominence of the bulb of percussion proclaim that in this culture-

[1] *Proc. Soc. Ant. Scot.*, vol. vii. p. 215. Tribute must be paid to this observant pioneer in research at Skara Brae for having so carefully defined fracture traits noticed in stone artifacts recovered by him.

phase the core was struck at a different angle from that in fashioning hand-axes. Characteristic Chellean (Abbevillian) bulbs and hollows of percussion are not so pronounced as, and the platforms are narrow compared with, those typical of the Clactonian technique, which persisted until the supersession of stone by metal. These methods were particularly suitable for, if not the only means of, shaping implements and obtention of large flakes from such rocks as those now under consideration.

Points arising will be briefly mentioned, but more detailed comment on the crude artifacts made of Scottish native rocks is reserved for a separate communication. Allusion to the response of some of these rocks to intentional fracture, which has been recognised, will, it is believed, demonstrate the interest many artifacts offer, and show that in Scotland there occur greater numbers of products of Mesolithic and later facies than the familiar examples generally known.

True blades not being obtainable from gneissose and granitic rocks, cores in the accepted sense are absent, but several massive lumps bearing regularly disposed flake-scars were collected. Several weigh no less than 5 lb., and some are so worked as to furnish the pieces with a sharp sinuous edge all round. Others are possessed of but one long and usually serrated edge. Whatever the edge, however, the elementary tool usually retains most of the cortex, and is always massive and capable of breaking the thickest bones. What may be described as core-tools were picked up, but two only are figured as the best worked, most typical, and suitable for comparison (fig. 5, Nos. 1 and 2). Intended for lateral prehension and provided with sharp edges produced by alternate regular flaking, they have been split and flaked in a masterly manner. They compare well with certain flint implements, and still more closely with many rude tools fashioned in quartzite and other intractable rocks. Long exposure has given most of these gneissose artifacts from Loch Roag a fine patina which enhances the rich natural hues of the stone.

The "core-tools" may be regarded as side-choppers or even as hand-axes resembling Lower Palæolithic elementary examples, and also the rude early Neolithic quartzite implements which occur in Lorraine [1] and other regions having no native stone of responsive and controllable properties. A specimen from Kentra, worked in a pebble of green quartzite, kindly lent me by the finder, Dr W. A. Munro (No. 3, fig. 5), is an implement intended to be held by the side. It is figured to show an instance from the mainland, probably of the early Bronze Age, and of a

[1] G. Goury, *L'Homme des Cités Lacustres*, vol. i. pp. 251–4 and fig. 78, also pls. xiii–xvi; and André Bellard, *Etudes Monographiques de Préhistoire Lorraine*, "Les Quartzites Ouvrés du Rudemont," Metz, 1935, pp. 17–25, pls. ii, vi, and vii.

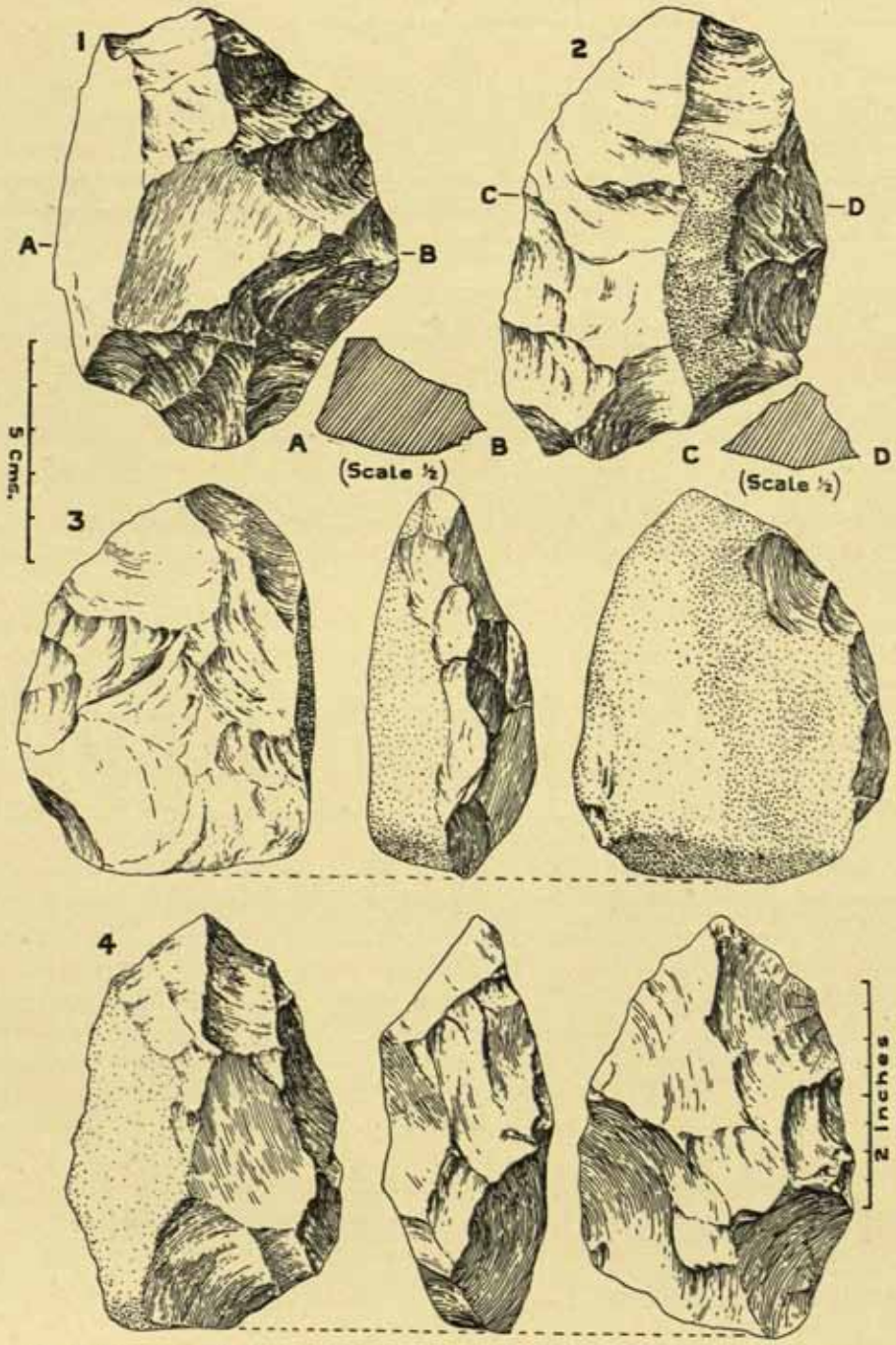


Fig. 5. Hand-axes or Choppers: 1 and 2. Mylonite, Berie Sands; 3. Quartzite, Kentra, Ardnamurchan; 4. Quartzite, Lower Palæolithic, Montrabe (Haute-Garonne).

type which has already been recognised in Scotland. The short and shallow flake-scars on the Ardnamurchan piece indicate that the pebble was worked to a sharp edge by means of a hammer-stone. With this western Scottish specimen is shown the drawing of one of the cruder hand-axes of dark Pyrenean quartzite from Montrabe (Haute-Garonne), probably of Acheulian age, and to all appearance flaked upon an anvil-stone (No. 4, fig. 5).

A thick flake-implement of light grey biotite-granite, showing a distinct swelling not unlike a bulb of percussion, is among the specimens recovered. The dorsal surface bears many small flake-scars pointing to

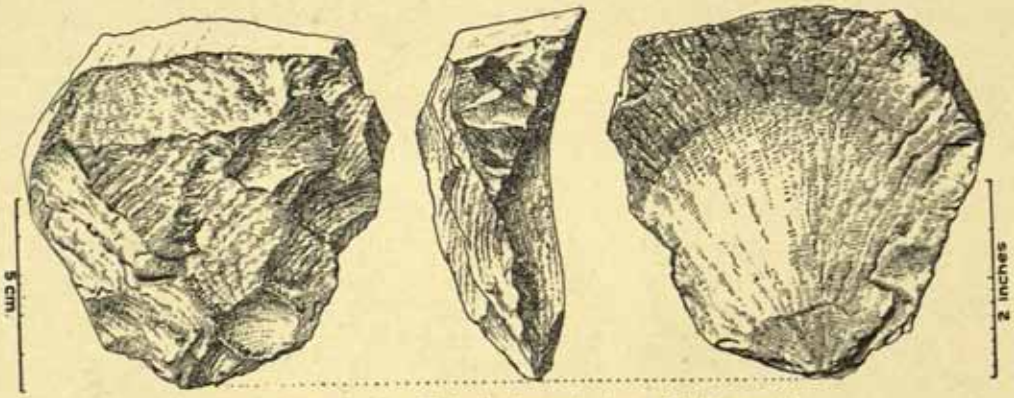


Fig. 6. Berie Sands: Flake-implement of grey Biotite-granite.

treatment of the surface before detachment of the piece from the parent cobble, some of the cortex of which was respected (fig. 6).

Scarcely less massive than the core-tools are some of the flakes. Although very many examples were collected, a few only are figured to show the effects of flaking on varieties of the local rocks, and also what is to be looked for in rocks of this nature when worked for use as implements. All the specimens present analogous features regarded as the characteristic indications of intentional fracture in these materials. The simplest flakes exhibit positive and negative features of fracture as definitely as do humanly struck flakes of flint. Lewis gneiss, granite, and mylonite do not respond to blows in the same way as the favoured material so extensively used where obtainable, but it has been noticed that even these coarse rocks fracture more uniformly than quartz of good quality. In the dark mylonite and red biotite-granite artifacts the evidence of working is clearer, and it is the more apparent when a comparison is drawn between the implements made of

these rocks and those of the local quartz, and even the implements fashioned in the common varieties of quartzite. Bulbs of percussion do not seem to occur in the biotite-granites and mylonite; instead, and just as

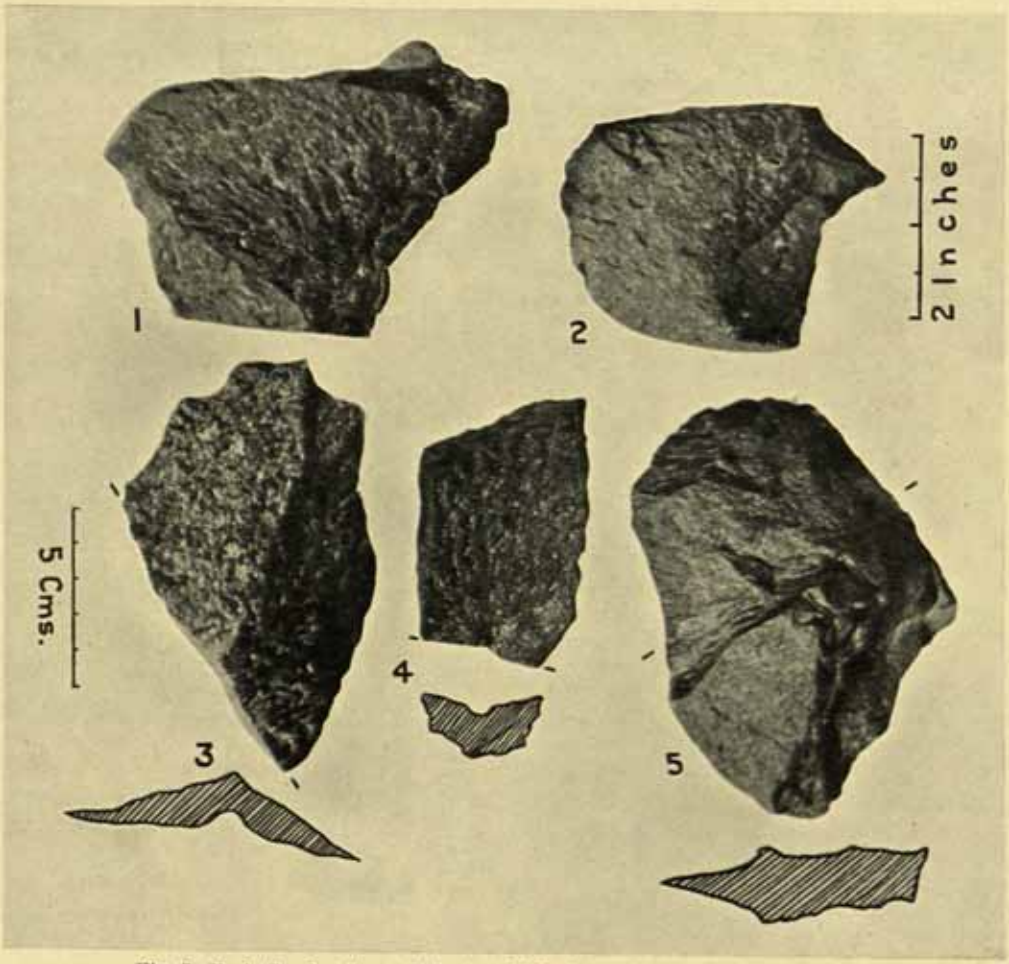


Fig. 7. Berie Sands: Stone Industry, Mylonite and Biotite-granite Flakes.

boldly, there appear distinct ridged protuberances or obvious hollows. Both correspond exactly to what are always regarded as the criteria of human workmanship in materials like flint. Close to the place struck, the penetrative effect of the blow would seem to distribute itself uniformly, but quickly losing its intensity, the force tends to spread irregularly.

Absence of blades and cores suggest that this fact did not escape the stone-knappers, who, nevertheless, profited by the peculiarities of the rocks to obtain the simplest, but at the same time powerful, cutting-instruments from diverse flakes.

Tempting as it is to figure numbers of examples of the coarse stones which have been struck, it is thought that the selection of flakes photographed for this paper conveys to the inquirer the main points observed, and that the series well illustrates features of fracture noted (fig. 7). Nos. 1 and 2 represent large flakes of mylonite, both showing characteristic ridged protuberances resulting from the blows dealt to separate them from the nodule. The first of this pair has been further treated by removal of a large flake from the face shown and from the upper or outer surface, which also displays a number of scars, two large and fairly regular. On the striking-platform the crust remains, indicating clearly that the piece was obtained by knocking a cobble or large knob broken from a rock by striking it against the sharp edge of another stone, *i.e.* by anvil technique.

No. 3, although consisting of a granitic rock less mylonitised than Nos. 1 and 2, bears similar but even more marked features. One face presents a deep hollow of percussion, shown in the section, and determining that the specimen is not a first flake removed from a nodule. The blow which detached it occasioned the very prominent ridge originating at the point of impact; this feature is well seen in the illustration. The negative or hollow may be likened to that visible in another flake of crushed reddish biotite-granite figured as No. 4. On the edge at the point of impact the hollow almost assumes the appearance of a notch. The upper surface also carries the same traits as its predecessor in this enumeration.

A heavy flake, No. 5, having much in common with the core-tools (Nos. 1 and 2, fig. 5), was detached from the parent piece of mylonite after surface treatment. Opposite the slightly worn longest edge, which bears signs of trimming, an excellent hold is provided by the thick flake-scarred butt.

The Pottery.

The ware, although mostly greatly weathered and affected by wind-blown sand, can be more readily assigned than the stone artifacts, which, in the absence of contrary information, must be considered as the products of the people who made the pottery. The relatively unaltered state of the worked stone (found in the same conditions as the pottery) would indicate no great antiquity, in addition to emphasising the more

rapid alteration of the softer material. This contrasting feature in the rate of weathering and alteration is well borne out by the fresh condition of the grits, composed mainly of quartz backing the ware.

The ware is generally reddish, ranging from a bright to a dull shade outside and inside, and, although well fired and hard, the core is greyish.

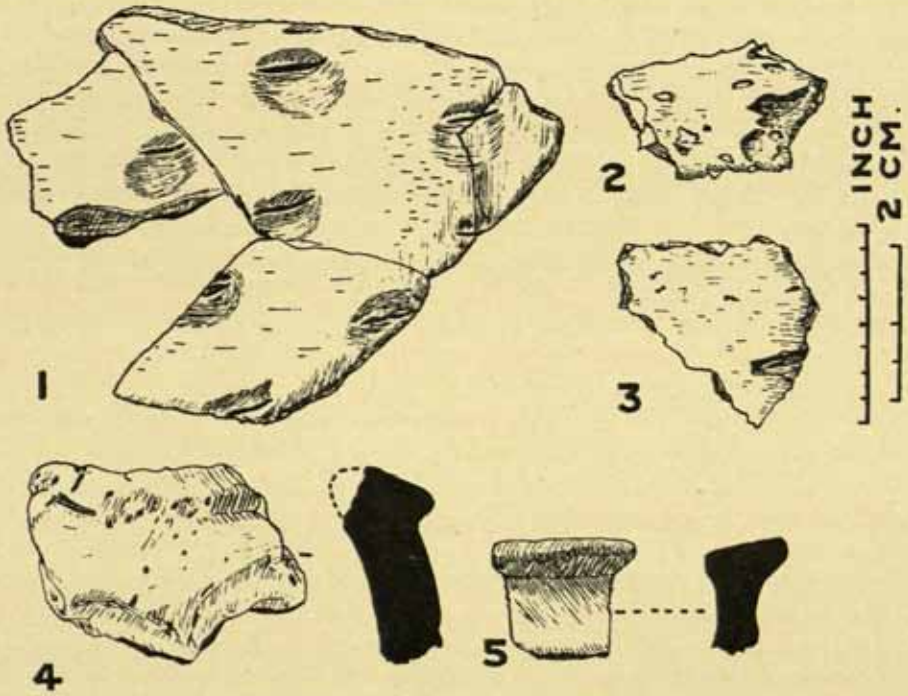


Fig. 8. Berie Sands: Fragments of Pottery.

Some of the sherds are bluish grey throughout; others are red externally with a grey interior.

Little can be said in description of the potsherds (fig. 8). Three different rim fragments, part of a base, and but a few ornamented sherds of two vessels constitute all that calls for more than cursory notice. In the case of No. 1 the ornament was produced by impressing a finger-tip so firmly as to leave its imprint and that of the nail in the clay before firing. The process was repeated at intervals. Another sherd, No. 2, also bears a finger-nail impression, but produced by the back of the finger. A third fragment, No. 3, shows the plainest of decoration possible, effected by stabbing the clay with a narrow sharp-edged object. Nos. 4 and 5 are rim fragments.

The largest fragment, a hard ware, dark brown in colour, that of a flat-based vessel, is thick and contains large grits and much sand. The outer surface of the bottom bears an infinite number of rush impressions such as might have been produced by basketwork.

From the flat rims, ornamentation, and quality of the pottery it is evident that the ware is characteristic of the fictile products associated with the brochs. This opinion is shared by Dr Graham Callander, to whom the sherds were submitted. When I showed him the stone artifacts I expressed the view that, although the more shapely quartz tools could not be assigned typologically, they suggested broch-dwellers' workmanship, especially by their association with the more massive coarse stone flakes, which are similar to those found elsewhere in the structures or ruins ascribed to these folks or their contemporaries. Moreover, various relics also found at Valtos support this contention. These objects comprise domestic appliances represented by much-worn saddle-querns and a dark granitic upper-stone, 6 inches in diameter, now scarred circumferentially, the flat nether surface worn quite smooth by long use. A few sawn, split, and worked bones were also picked up in the kitchen-midden debris, consisting mainly of the shells of a variety of edible molluscs.[1]

A spherical nodule, 4 inches in diameter, of dense white quartz much injured by use, found near the northernmost ruins with a heap of crushed quartz and components of the local gneiss beside a flag greatly indented of surface, calls for comment. Elementary tools of this sort are usually, but, I think, rather inaccurately, designated under the general term "hammer-stone." This example, pitted and bruised all over, is exactly like the simple implements sometimes found in numbers at prehistoric and even later domestic sites yielding fictile ware. Utilised stones, whether flint or other material, exhibiting similar signs of employment, would, in my opinion, be more correctly described as pounders, for it is believed most served to crush or break up stone for the purpose of making grits for backing potter's clay.[2] Experiments in triturating stones and pebbles with cobbles on a hard anvil have resulted in producing analogous pittings on the instruments used. In the case of percussion flaking and shaping by means of a stone held in the hand, tests show that characteristic abrasions of a different and distinct kind are imparted to the surface of the rude but veritable hammer. On this, if used long

[1] One of these bones has been identified by Miss Margery I. Platt as a metacarpal of *Cervus elaphus* (Red Deer).

[2] From a habitation site at Iver, Bucks, I recently recovered a greatly abraded round nodule of flint with a lump of potter's clay, sherds of Neolithic B ware, and worked flints. *Records of Bucks*, vol. iii. pt. 4, pp. 289 and 292.

enough, the marks of injury merge to form flat or slightly sunken areas at these places where the tool has constantly struck the material operated upon. Further, the true hammer-stone shows indications of service only in a few places.

Bronze Pin.

From the evidence available it appears that the people whose relics have been considered were in their isolation compelled to live in the conditions of a stone culture and were unfamiliar with metal. Yet bronze objects have occasionally been found at sites of this kind, but it cannot be determined if such relics belong to a secondary occupation or are specimens derived from intercourse with more advanced races.[1] An ornamented bronze pin found at this Valtos site cannot be reconciled with either suggestion, as its character points to a date long posterior to the fashioning of the artifacts noted in the foregoing paragraphs. Apparently it was dropped at the place where it lay, until exposed by the wind lifting the sand (fig. 9).

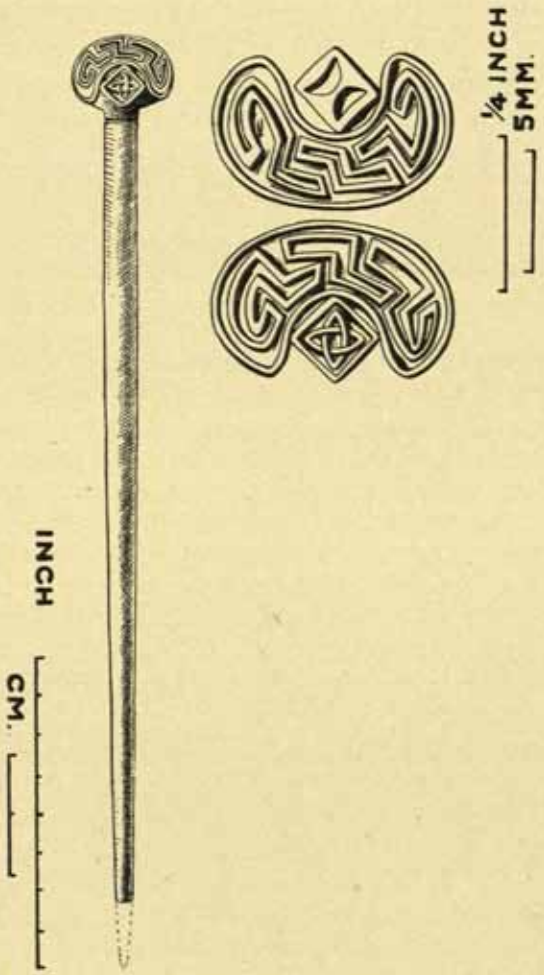


Fig. 9. Berie Sands: Bronze Pin.

The bronze pin is an important addition to the record of relics bearing some of the characteristically formed patterns analysed and summarised in *The Early Christian Monuments of Scotland*. Although the point is wanting, the curiously ornamented ellipsoidal head is fairly well preserved. In its present condition the pin measures $2\frac{3}{4}$ inches in length, but it is likely that originally it was 3 inches long.

[1] The Royal Commission Report, *loc. cit. supra*, states that some slag was found here.

A line encircles the body of the pin immediately below the head. Both convex faces bear almost identical patterns of the nature of frets adapted to the curved outlines of the compartments in which they seem to stand in relief, an effect cleverly obtained by deeply cutting the metal. In each of the two compartments the central motif consists of a Z-shaped design based on the conventional stepped rectangular figure, but with extremities and disposition reversed from the late Mr Romilly Allen's standard.[1] This is flanked on either side by another stepped figure, the outer extremities of which are curved downward and back. A line across the crown, and at right angles to the long axis of the pin, gives the impression that the head is divided. Each ornamented face is triangularly checked in its lower part, thereby enhancing the crescentic form of the compartment above. The metal, left centrally within the horns, formed lozenge-shaped panels for further ornamentation. In one of these two small panels the pattern consists of two looped rings of equal size.[2] The ornament contained in the other panel, although plainer, is equally interesting. It comprises an adaptation of the well-known double crescent,[3] but the two components are separated and do not impinge as is usually the case.

It seems hardly necessary to recall that crescents, disposed singly, in pairs, or forming part of a combination, are regarded generally as female symbols, and as such their origin goes back to remote antiquity. The looped rings are no doubt cognate. In art motifs these symbols are widespread in the Old World, and Scotland alone affords very many instances and variants on stone monuments and articles of personal adornment.

[1] *Op. cit.*, No. 135, p. 67.

[2] *Ibid.*, No. 489, p. 200. This design appears on the upper part of a bronze pin with movable head, now preserved in the National Museum: *Catalogue of the National Museum of Antiquities of Scotland*, 1892, FC 137, p. 206.

[3] *Loc. cit.*, No. 126, p. 63.

III.

LONG STALLED CAIRN AT BLACKHAMMER, ROUSAY, ORKNEY. By J. GRAHAM CALLANDER, LL.D., F.S.A.Scot., Director of the National Museum, and WALTER G. GRANT, F.S.A.Scot.

Before this cairn was excavated it was just an oblong heap of stones covered with a growth of grass and heather, more suggestive of the ruins of a little farmhouse than of what it turned out to be, one of the most interesting of the stalled chambered cairns so far excavated in Rousay. It stands on a small flat shelf on the steep hillside rising immediately above the north side of the road which runs round the island, at an elevation of 200 feet above sea-level, about 450 yards north-west of the steading on the farm of Nears. The mound measured 78 feet in length, 34 feet in breadth, and 5 feet in height. Just above it, on a higher terrace, are the foundations of an old house called Blackhammer, after which we have named the monument.

The cairn, which is oblong with rounded ends and slightly convex sides, measures 72½ feet in length and 27 feet in greatest breadth (Pl. V). The upper part of the monument had been taken away to provide building material, so that its general height at present is about 5 feet (fig. 1). Its main axis runs about west by north and east by south.

When the outer face of the monument was laid bare it was found to be greatly reduced in height; at the east end it was 1 foot 8 inches high, at the west end from 2 feet to 2 feet 3 inches, along the north side generally 1 foot 6 inches, but near the east end only 6 inches; on the south side, from 2 feet to 2 feet 6 inches remained, rising to 3 feet 6 inches towards the west end. But, though only a fragment of what it must have been originally, it displayed features that had never been noted before in any Scottish burial cairn. One peculiarity was that no signs of an entrance passage into the burial chamber could be found, although this was carefully searched for—however, it was discovered later when the burial chamber was examined; another peculiarity was the way in which the stones had been laid—it was quite different from anything hitherto recorded.

The foundation course of the outer wall consists of a single row of flag-stones which project a distance of 3 inches from its face, so as

to form a plinth similar to that seen in the stalled cairn, the Knowe of Yarso, which lies only 1000 yards to the west. For a short distance at the ends of the cairn the stones are laid horizontally, in the ordinary way, above the foundation, but along the sides the face of the wall shows a unique method of building. Though the stones are still laid on their flat faces, they are set not horizontally, but obliquely, forming a series of stretchers slanting down from right to left, and the adjoining ones

Fig. 1. Blackhammer Cairn from the west.

from left to right, the result being a design of alternate hatched triangles (fig. 2) which recalls the decoration seen on some of the pottery found in the Unstan cairn. As in other stalled cairns which have been excavated in Rousay, and in the horned cairns examined in Caithness, the wall is double, the inner part being faced with ordinary building. This inner face has been traced at various places round the cairn and still maintains a height up to 3 feet 9 inches above the foundation; the interval between it and the outer face varies from 3 feet to 5 feet 4 inches on the sides, and 7 feet 3 inches at the west end, where there is a vacancy between the outer part of the wall and the face of the inner part.

As we have seen, when the outer wall was cleared of fallen material, no trace of the entrance passage could be detected, but this was discovered later on when the debris which filled the burial chamber was

Fig. 2. Blackhammer Cairn. Wall on north flank; eastern half above runs into western half below.

removed. It is placed on the south side of the monument and runs into the third compartment of the chamber from the east end. The reason that its mouth could not be found was that it had been carefully sealed up by a wall 5 feet thick, in the building of which care had been taken to lay most of the stones in alignment with the slanting stones of the outer face of the cairn wall (fig. 3); the inner face of this packing is rather roughly built, and has two rudely made steps (fig. 4) at the foot. The passage is 9 feet 9 inches long and 2 feet 6 inches wide.

Fig. 3. Blackhammer Cairn. Built-up entrance from the outside.

Its walls are now no more than 3 feet 6 inches high, the upper part, together with the lintels with which it was roofed, having been removed.

The burial chamber or gallery measures 42 feet 6 inches in length and from 4 feet 9 inches to 5 feet 6 inches in width, while the present height of the walls ranges from 2 feet 1 inch to 5 feet 1 inch on the south, and from 3 feet 2 inches to 4 feet 10 inches on the north side. The gallery is divided into seven compartments by upright divisional slabs set on end, in pairs opposite each other, and bonded into the lateral walls, leaving a space between the inner edges to allow passing from one cell to another, so that there are seven small stalls on each side (fig. 5). Four of the divisional slabs have been dragged out, two from both sides of the stall on the north side of compartment No. 5, and two from the stall on the south side of compartment No. 4. The upright divisional stones are dressed roughly

flat on the top, and are from 2 feet 6 inches to 4 feet 11 inches high on the north, and from 3 feet 6 inches to 4 feet 6 inches on the south side. Their thickness varies from 2 inches to 8 inches and the extent of their projection from the walls from 14 inches to 1 foot 11 inches. The stalls between the uprights range from 4 feet 9 inches to 5 feet 10 inches in width. The ends of the chamber are not finished by building, but

Fig. 4. Blackhammer Cairn. Built-up entrance from inside, and secondary buildings: 1, left bottom corner; 2, right foreground.

terminate in a large slab set on end, that on the east being 4 feet high by 3 feet 5 inches broad, and that on the west 5 feet 3 inches high by 4 feet 9 inches broad. In the interior are two masses of later masonry of quite uncertain purpose and period. The first, which has been inserted in the angle formed by the north wall of the chamber and the slab dividing the second and third stalls, and almost opposite the entrance, is a buttress, measuring 2 feet 6 inches by 1 foot 10 inches by 2 feet 10 inches in height (fig. 5: 1). The second is a very rude piece of masonry, the building of which possibly accounts for the removal of the third and fourth divisional flags on the south, and of the fourth

on the north side of the chamber. It springs from the south wall just west of the entrance, and follows an ogee curve obliquely across the chamber into the north side of the fifth stall from the east (fig. 5: 2).

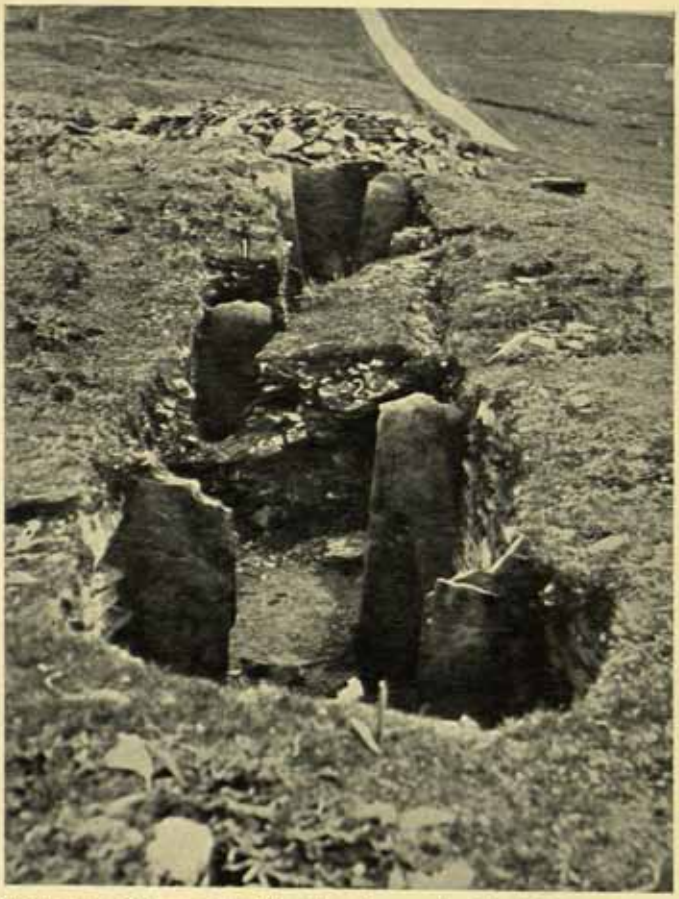


Fig. 5. Blackhammer Cairn: view of interior from west; 1 and 2, secondary structures.

The faces are broken down except for a length of about 4 feet 6 inches on the north side, where it still remains 3 feet high.

We cannot suggest what these two intrusive buildings were meant for, nor can we say anything very definite about their date.

This is the second chambered cairn in Rousay to have the mouth deliberately closed, and that by careful building—the other being the Midhowe Cairn. In the latter, however, there were two sealing walls,

one built in the mouth of the entrance passage and the other in its inner end.[1] A third Orkney example, on the Calf of Eday, was brought to the notice of the Society at our last meeting,[2] but in this case the whole of the passage was blocked up, the stone being carefully built in. These three cairns, it will be noted, are all of the stalled variety, but in the two others of this type excavated by us, the Knowe of Yarso[3] and the Knowe of Ramsay,[4] there were no indications that they had been sealed up. This peculiarity has not been noted in any of the other chambered cairns of Orkney and only in one of those in Caithness. This was in the large round cairn at Camster, where Dr Anderson found the entrance passage, 20 feet in length, completely filled with a packing of stones which "appeared to have been introduced purposely."[5]

A considerable number of relics were found amongst the debris—the fallen stones and earth—with which the burial chamber was encumbered. These consisted chiefly of animal bones, which were generally mixed through the debris, but they were most numerous at the eastern end of the gallery. Very few were found in the opposite end west of the entrance. In all likelihood this mixing had taken place when the upper parts of the monument were being removed in late times, and when the larger stones were being dragged out. We found that the same thing had occurred when the stalled cairn, the Knowe of Yarso, was being despoiled. The result was that stratification was not to be expected, except, perhaps, at the floor level.

Amongst the bones scattered throughout the debris at the upper levels and chiefly in cell No. 1 were those of sheep, ox, red deer, pink-footed goose, and cormorant. In the bottom layer were the remains of sheep, ox, red deer, and gannet. Many of the bones showed signs of burning or scorching.

At the lowest level were found, in addition to animal bones, the much decayed and scanty fragments of two adult male skeletons, the greater part of a wide-mouthed shallow round-based urn (fig. 6), a finely made flint knife which had passed through the flames, as it was burnt white and splintered into pieces (fig. 7), and two scrapers and five splinters of flint. A stone axe (fig. 8), was also discovered at the same level.

The urn, which was of grey colour, was so cracked and crumbly that it was impossible to restore it. The greater part lay in a hollow

[1] The sealing up of the inner end of the entrance passage at the Midhowe Cairn was only discovered when H.M. Office of Works were completing the preservation work on the monument, which took place after it had been described to the Society in the *Proceedings*, vol. lxviii. p. 324, fig. 7.

[2] *Supra*, p. 123.

[3] *Proc. Soc. Ant. Scot.*, vol. lxix. p. 325.

[4] *Ibid.*, vol. lxx. p. 407.

[5] *Scotland in Pagan Times—Bronze and Stone Ages*, p. 249.

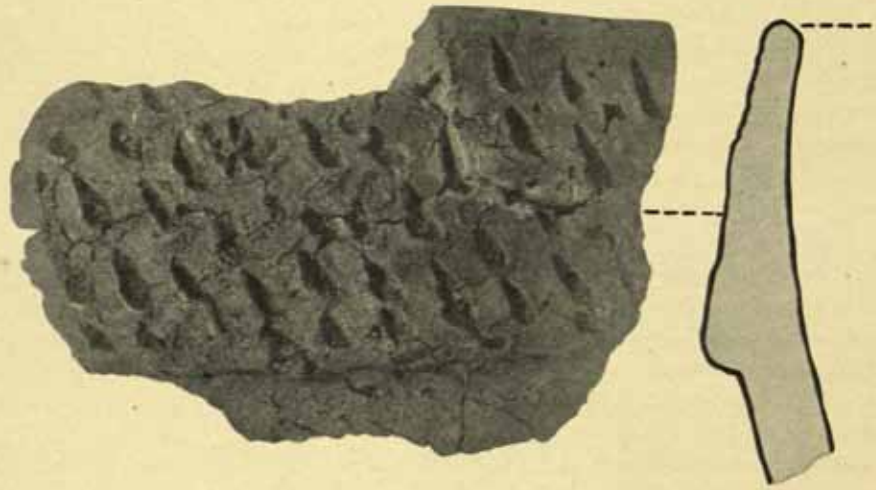


Fig. 6. Fragment of Neolithic Urn found in Blackhammer Cairn. (¼.)

Fig. 7. Flint Knife found in Blackhammer Cairn. (¼.)

Fig. 8. Stone Axe found in Blackhammer Cairn. (¼.)

in the floor of cell No. 6, 2 feet from the south wall, and the same distance from the divisional slab on the east side; the remainder of the vessel lay near the centre of the cell. The urn had measured about 8 inches in diameter at the mouth, and the wall between the brim and carinated moulding where it turns into the round base measures $1\frac{5}{8}$ inch in height. This part is decorated by five horizontal lines of pear-shaped impressions. The thickness of the rounded bottom is $\frac{5}{16}$ inch. The flint knife after being put together again was found to be leaf-shaped and carefully dressed on the upper face, the under side being plain. It measures $3\frac{3}{8}$ inches in length, $1\frac{1}{16}$ inch in breadth, and $\frac{9}{32}$ inch in thickness. The two scrapers and five splinters of flint, of which four were calcined, were found at the lowest level in cells Nos. 1 and 3. One of the scrapers and a slightly worked splinter lay under the step behind the piece of walling which closed the mouth of the entrance passage. The stone axe, which measured $3\frac{9}{16}$ inches long, $2\frac{1}{8}$ inches broad, and $\frac{7}{8}$ inch thick, was found about 6 inches above the floor, 1 foot out from the south-west corner of cell No. 1, animal bones being found above and below it.

Although Dr Anderson had drawn special attention to the double outer walls which he had discovered in the horned cairns of Caithness, and had remarked on the concentric circular walls in some of the chambered cairns of Orkney, it is doubtful if archæologists had really visualised what finely built structures these monuments were. It has only been during the last four years, after the long, stalled cairns on Rousay, and the circular cairns at Unstan and on Wideford Hill, were stripped of the accumulations of soil and fallen debris with which they were encumbered, that it has been realised what striking monuments they must have been—that instead of consisting of conical mounds of stone piled up over the burial chambers they were elaborately constructed houses for the dead incorporating distinctive, ornamental, architectural features. In the horned cairns of Caithness and in the round cairns and stalled cairn, the Knowe of Ramsay, in Orkney, the outer wall shows orthodox building, with the stones laid on bed, but in the long, stalled Midhowe, Yarso, and Blackhammer cairns the face of the wall is built so as to display such ornamented designs as those seen in fig. 9.

The long, stalled cairns of Rousay and other Orkney islands have generally been so much despoiled that we have no idea of what their original height was, and we can only imagine how the roofs were finished off. They must have been distinctly higher than the tallest of the divisional slabs between the stalls, which in the case of the Midhowe

Cairn was 7 feet 6 inches. As for the form of the roof, it would naturally be carried up to form a curved top with the stones being laid on the slant to throw off rain-water. In the round cairn on Wideford Hill, which has three concentric walls, even though it is greatly disturbed on the top, the stones have been laid slanting downwards towards the outside.

The opinion has been expressed that these long cairns had been finished off by heaping soil over them, but surely no people were going

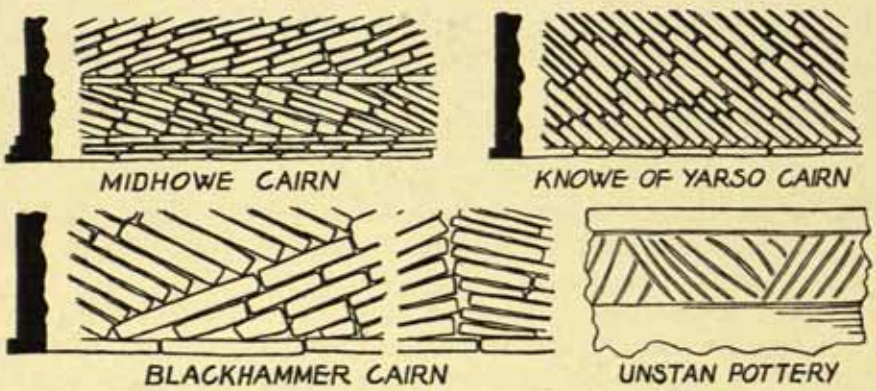


Fig. 9. Designs on the outer walls of Rousay stalled cairns and Unstan pottery.

to erect buildings with such striking architectural features with the intention of hiding them under a screen of soil. If any argument against this is necessary it has only to be noted that the Knowe of Yarso is built practically parallel to the edge of a ragged cliff, too close to it in places to provide a wide enough foundation for a covering of soil.

REPORT ON THE ANIMAL BONES. By Margery I. Platt, M.Sc., Royal Scottish Museum.

The animal remains from Blackhammer constitute fragments of the skeletons of domestic species principally, although relics of the Red Deer (*Cervus elaphus*, L.) are also present, together with a few bones from birds of the sea common in these islands. In most cases the fragments are small and too broken to classify with certainty. Ribs of domestic stock are most numerous, and the relics throughout show evidence of fire. Sheep remains predominate, whilst oxen and red deer are represented in equal proportions.

The bones submitted appear to be derived from two layers designated "Top" and "Bottom" Layers, and the various species found in each of these are cited in order of their numerical importance. Most of the bones were found in cells Nos. 1 and 2, the larger number being found in the former.

Top Layer.

Sheep.—Many lower jaws with teeth indicate sheep of a large size. No horn-cores occur, and therefore it is impossible to determine the breed. From the lower jaws it is possible to estimate the number of animals in this section. There are six right mandibles with full adult dentition, four left ones from immature sheep, whilst twelve permanent lower molars found singly make it certain that at least six other sheep were present. In all, this indicates a minimum of sixteen individuals, of which one-quarter are immature. Limb bones and ribs, all fragmentary, complete the relics of this species.

Ox.—In addition to a fragmentary scapula and terminal phalange, the whole of the bovine remains comprise broken pieces of rib. It is therefore quite impossible to ascertain the breed represented or the actual numbers present.

Red Deer (*Cervus elaphus*).—The remains of this species, as in the case of the ox, are almost entirely composed of fragmentary ribs. They vary in size and thickness, indicating that young and old deer occur, but no estimate of their number can be given. There is a single piece of antler of medium size.

Birds.—The bird relics include the wing-bone of a pink-footed goose (*Anser brachyrhynchus*, Baillon) and the pelvis of a cormorant (*Phalacrocorax c. carbo* (L.)).

Chamber 1—*Bottom Layer.*

Sheep.—Sheep remains in this section are again the most plentiful. Fragments of left mandibles prove the presence of at least eight sheep. All the dentitions were adult. Other skeletal remains of this kind indicated full-grown sheep of large size, although evidence of the actual breed could not be found.

Ox.—Bovine relics were not so numerous as sheep. Fragments of ribs, limb bones, and pelvis composed the majority of the remains. No definite breed, in the absence of horn-cores, could be recognised.

Red Deer (*Cervus elaphus*).—The remains of this species were as equally numerous as those of the ox. Fragments of ribs were again

plentiful. A few ulnæ, a good sacrum, and three pelvic bones also occurred. In no instance was there any indication that the deer differed in size from those of the present day.

Bird.—Two pieces of the wing-bone of a Gannet (*Sula bassana*) were the sole avian relics at this level.

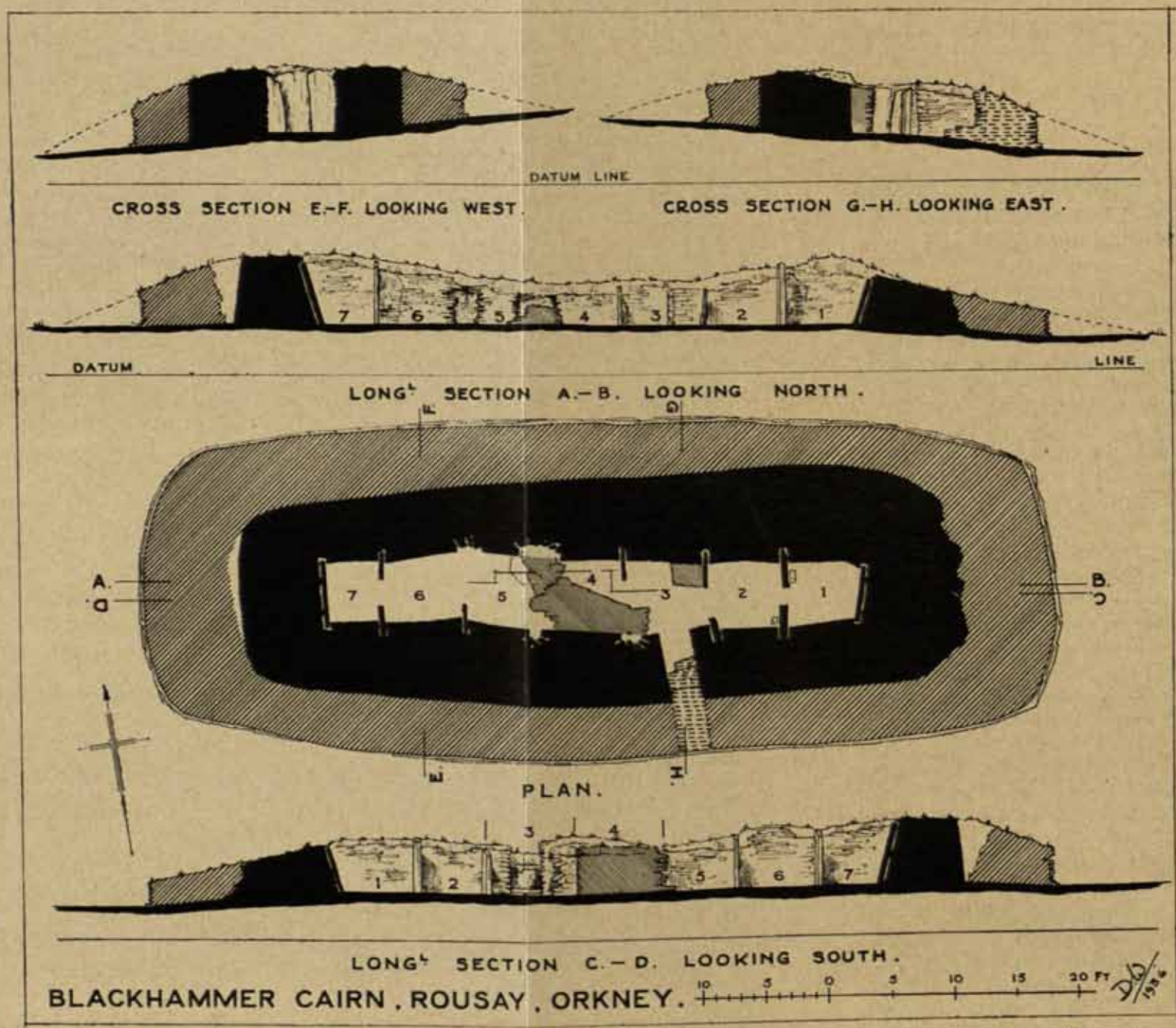
REPORT ON THE HUMAN REMAINS. By Professor ALEXANDER LOW, M.D., F.S.A.Scot.

Bones found in Chamber No. 7.

The fragmentary human remains include: Supraorbital part of frontal bone with marked ridges; some 6 pieces of rather thick parietal bone; pieces of left upper and lower jaws with 2 molars and 2 premolars in upper jaw and 2 molars and 1 premolar in lower jaw, crowns much worn down, but powerful teeth; fragments of right side of male pelvis; fragments of right and left femur. One adult male skeleton.

Bones found in Entrance.

The only skull-bone represented is a fragmentary lower jaw and some teeth; 13 fragmentary vertebræ; left half of a pelvis probably male, and pieces of sacrum; some 16 fragmentary ribs, amongst which can be identified a right first and a second left; fragments of right and left scapula; right and left clavicle; fragments of left humerus and of right and left radius; 1st, 2nd, 3rd, and 4th metacarpals of right hand and 4 proximal phalanges; upper two-thirds of right femur; pieces of shafts of right and left tibia; 2 pieces of shafts of fibula and lower third of a right fibula; fragmentary talus and os calcis. Numerous fragments but no duplication. One adult male skeleton.



J. Graham Callander and Walter G. Grant.

Plate V.

[*To face page* 308.

IV.

HOWER, A PREHISTORIC STRUCTURE ON PAPA WESTRAY, ORKNEY. By WILLIAM TRAILL, C.E., J.P., F.S.A.Scot., and WILLIAM KIRKNESS, F.S.A.Scot.

This report was illustrated with 400 feet of 16 mm. silent film.

Sandstorms have preserved for Scottish archæology another prehistoric settlement in Orkney. The site under review lies on the west side of the small island of Papa Westray, an island which has already contributed much to our knowledge of a long-forgotten past. Evidence of the occupation of this settlement has been known to the islanders for a long time as each succeeding storm sends huge seas battering the face of the cliff, and carrying away parts of the foreshore on which it is situated.

The name Hower was given to the site by the Norsemen. The word is the plural of "how," a mound, because at one time the site was occupied by more than one mound. To-day the islanders speak of the site as the Knap of Hower, showing that they have forgotten the original meaning of the word. Knap means a cap, and one could not speak of the knap or cap of the mounds.

Encroachment by the sea showed us that unless excavation was done very soon, a survey of this site would be impossible, as it would be entirely swept away. Sand covered the top of the masonry to a depth of some 8 feet. After this was cleared, the work of excavating was comparatively easy. The inside of the building was full of sand, which was very quickly disposed of by throwing it over the cliff. The excavation revealed two buildings lying parallel to each other, the larger being situated to the south of the other, and lying with its main axis N.W. and S.E. (fig. 1). Both buildings are constructed of dry-built rubble masonry. The inside of the larger building somewhat resembles the outline of a figure of eight on plan. The area within the thick enclosing wall is 32 feet long and 16 feet wide, and is divided transversely into two parts or chambers by stone slabs set in alignment but having intervals between them. The side slabs are bonded into the lateral walls, and while these slabs stand as high as the remaining height of the wall, approximately 5 feet, they appear to have been broken off at the top (fig. 2). The slabs forming the middle portion of the partition

are complete and only measure 2 feet 4 inches high (fig. 3). The plan shows kerbstones in the middle of the partition which may be the remains of a small lobby. On the north side of the inner chamber, 2 feet 3 inches above the floor, is an aumbry, 2 feet 2 inches wide and 1 foot 2 inches

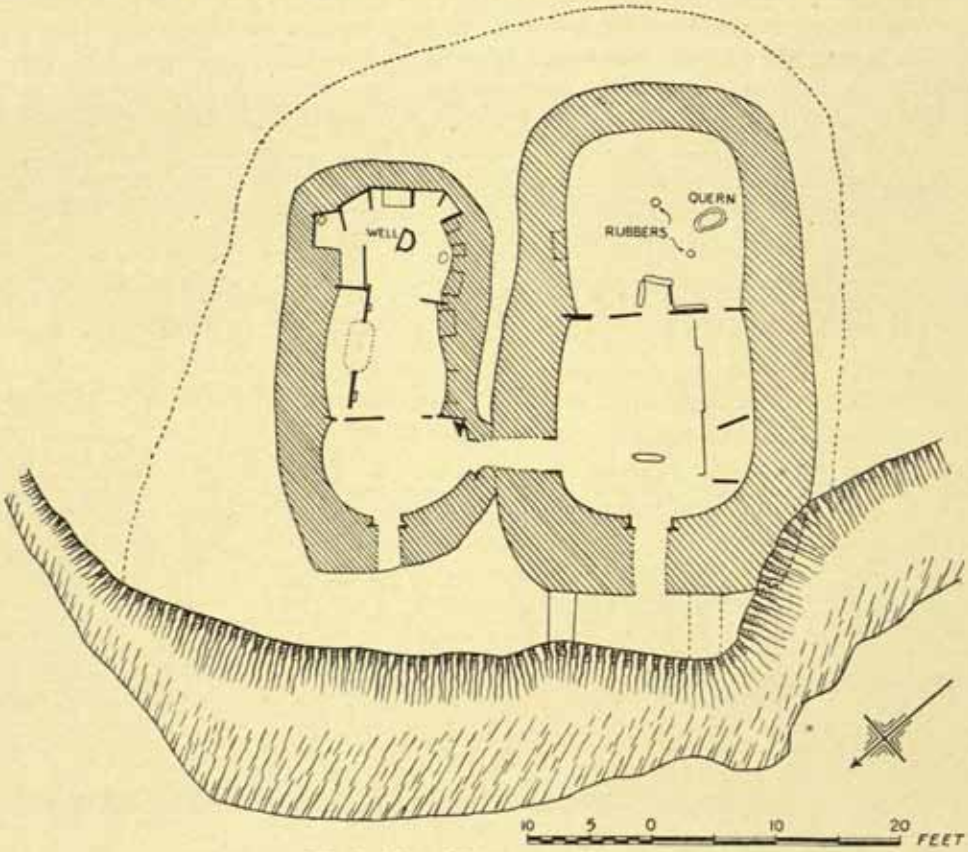


Fig. 1. Plan of Structure at Hower.

high, of the usual type found in early buildings. On the south side and close to the wall in this chamber a saddle-quern was found. Two rubbers, one larger than the other, which had been used with this quern, were got on the floor which at this part was covered with ground shells of shellfish. The entire side of the south wall of the outer chamber of this building was occupied by a low platform 4 inches high. It had been divided by thin stone slabs and may suggest bed accommodation. The plan shows a short length of foundation wall on the outside of the

structure, with a pavement of heavy slabs opposite the main entrance. Erosion by the sea has so destroyed this feature that its purpose is not ascertainable. Entry to the building was obtained by a stone-covered passage-way, 6 feet long, 3 feet wide, and 4 feet 8 inches high, in the centre of the west end. The entrance doorway shows some exceedingly interesting features. The door-checks are formed of stone slabs set on end, which are placed at the rear of the passage-way instead of nearer the middle where one would expect to find them. Apparently the door has been of light framework, because the openings in the stone jambs, which were made to receive the cross-bars used for keeping it shut, are very small.

Fig. 2. Hower: Slab bonded into wall on north side of larger building.

The communicating passage, which gives direct access to the other chamber, is also stone-covered. It measures 8 feet long, 5 feet through the wall of the south chamber and 3 feet through the wall of the one on the north; it is 2 feet 6 inches wide, and 3 feet 4 inches high. The jambs consist of upright slabs, but the door-checks are at the other end of the passage, thus showing that this entry could only be locked from the building on the north. The smaller building, which is 30 feet long and 12 feet broad inside the walls, is somewhat similar in shape to the other. Its walls are not so high and, generally, the structure is in a more ruinous condition, but from the character of the dry-stone masonry and other details it may be regarded as contemporary. Two parallel rows of slabs set across the structure have partitioned it into three compartments. The main doorway has also been built at the shore end. When excavated, this doorway was found to have been blocked up, as was the case with the rear of the doorway leading directly into the adjoining building. This main doorway had checks consisting of upright slabs similar to the other two doors. It may be noted that a piece of cetacean bone was used as building material in the wall of this chamber at the doorway of the communicating passage.

The third or inmost compartment is possibly the most remarkable, as the greater part of the wall had been faced with slabs set on edge with other slabs projected from them to form a series of cubicles or stalls round the end. Filling the entire south wall of this chamber, three

small cupboards of masonry, approximately 1 foot high, had been constructed in the thickness of the wall 1 foot 6 inches above the floor. No indication as to the purpose of these stalls and cupboards was revealed. Two pits were found in the floor of this chamber, of which one in the front of the cupboards, measuring approximately 12 inches by 10 inches,

Fig. 3. Hower: Larger building from the south-east.

contained some bones of a young ox and an immature sheep, also a hammer-stone. This pit was covered with a stone slab. The rough formation of stones round the other pit, which measures 2 feet by 14 inches, suggest a well, as the enclosed space is continuously wet, and in winter contains clear water. Some bones of sheep and ox were got in this pit also, which was similarly covered, and near it on the floor level were two horn cores of oxen.

In the middle compartment, two cupboards or recesses had been built in the south wall, 1 foot 6 inches above the floor, and slabs and very rough masonry of a later occupation formed a partition 2 feet 6 inches in front of the wall on the north side. The space behind reminded

one of the so-called bed recesses found elsewhere in Orkney; but here the space was filled with earth and debris.

From the amount of masonry which the spade has laid bare, this site has obviously been one of considerable importance. In considering the evidence as to the date of the structures, let us begin with the buildings, and compare them with the now world-famous settlement of Skara Brae, also in Orkney. Skara is in a different geographical setting. A large sandy bay was selected by this colony of workers, and it would appear that this location was necessary for their work, as despite the sandstorms which repeatedly buried their buildings, generation after generation struggled to clear out the sand. Sometimes they found rebuilding an easier way, but they continued to live on the site. There is no such sandy bay at Hower. As to the masonry of the builders, does it give us any clue in our attempt to establish a date for Hower? The buildings at both places show rounded corners, but the type of masonry at Hower is of a much superior quality to that of Skara, and no feature as elaborate as our door-checks was designed by their architects. We have referred to the cetacean bone built under the lintel of our doorway in the smaller building at Hower. This feature was also found in a wall at Skara, but other builders in prehistoric times used this material similarly, as in a very early building at Jarlshof in Shetland. As in Hower, we find saddle-querns in the buildings at Skara, where four were discovered. But many such querns have been reported from entirely different sites. In the Bronze Age foundry at Jarlshof, Shetland, Dr A. O. Curle, who conducted the excavations there, found similar querns, and suggested that these might have been used for preparing the clay employed in fashioning moulds for casting metal. We found ground shells in abundance on the floor where the saddle-quern stood at Hower, and Dr Callander, in examining the pottery found at Hower, detected similar pulverised shells in the shards found on that site. Thus we may claim that these querns were used for the treatment of clay used in earthenware. Comparing the tools, a list of which is appended to this paper, the hammer-stones and stone anvils, the hammers and borers of bone, and indeed all the movable equipment found at Hower, can be paralleled in the brochs. The same can be said of the pottery. It is also interesting to note that at Hower there are large box-like structures or cubicles, formed of slabs set on end against the wall. Such constructions were quite prominent in the secondary buildings at the brochs of Midhowe and Aikerness.

We find the situation at Hower very puzzling. The site is now sandy, but though found to be full of sand the buildings are erected on red clay,

except at the west end where they stand on the top of an earlier kitchen-midden. Examining the section of sand left after excavation, it was found that at a level covering the top of the walls, vegetation had grown to a depth of about 4 inches. The line of vegetation could be followed along the entire section. Stones found in this line were not water-worn. A closer view showed stone fragments in profusion. The contour of this site at this period must have differed greatly from that of to-day, as a thickness of 8 feet of sand now covers the vegetation which we have noted.

A fragment of black pottery, possibly of an earlier type than that got in the buildings, was recovered from the midden. Indeed the buildings at this part were founded on the top of the midden used by an earlier people. From the amount of bones found, the occupants must have used cattle as food for a considerable time. Shellfish were also a favourite article of diet. After one storm ten years ago, a pit, 4 feet deep, was seen full of limpets. Shells of razor-fish were also got in abundance. But the finding of large quantities of oyster-shells on a site where it is now impossible for them to grow suggests that erosion by the sea may have been so formidable as to have altered the whole outline of the land at this site. A large land-locked bay might have contained suitable breeding beds for oysters, and would also explain the presence of so much sand.

As far as is known, the twin buildings at Hower have no exact parallel in Scottish archæology. The occurrence of door-checks in all the doors is believed to be unique, and the masonry is of an exceedingly high standard for prehistoric buildings. As the pottery and many of the artifacts are similar to those used by the people of the brochs, and as some of the architectural features at Hower are to be seen in some of these structures, a contemporary occupation is suggested.

We acknowledge our indebtedness to Dr J. Graham Callander, Director of the National Museum of Antiquities of Scotland, for much valuable assistance; to the Society of Antiquaries of Scotland, for a grant which enabled us to finish the excavation; to Mr Charles S. T. Calder, A.R.I.A.S., F.S.A.Scot., for his assistance; to Miss Margery I. Platt, M.Sc., for the Report on the Animal Bones and Shells; and to Mr A. D. Lacaille, F.S.A.Scot., for his Report on the Flints.

List of Artifacts.

Point of tongue-shaped piece of cetacean bone, the under side smoothed by rubbing., $4\frac{11}{16}$ inches long, $1\frac{1}{2}$ inch broad, 1 inch thick.

Scapula of sheep, imperfect, measuring $6\frac{1}{8}$ inches long, $2\frac{15}{16}$ inches broad, spine on under side cut off and rubbed down. Point of finely made bone pin, $3\frac{1}{8}$ inches long, point $1\frac{11}{16}$ inch. Sharp end of a pointed bone implement, $3\frac{5}{6}$ inches long. Finely pointed bone borer made from splinter of bone. Hammer of cetacean bone, imperfect at one end,

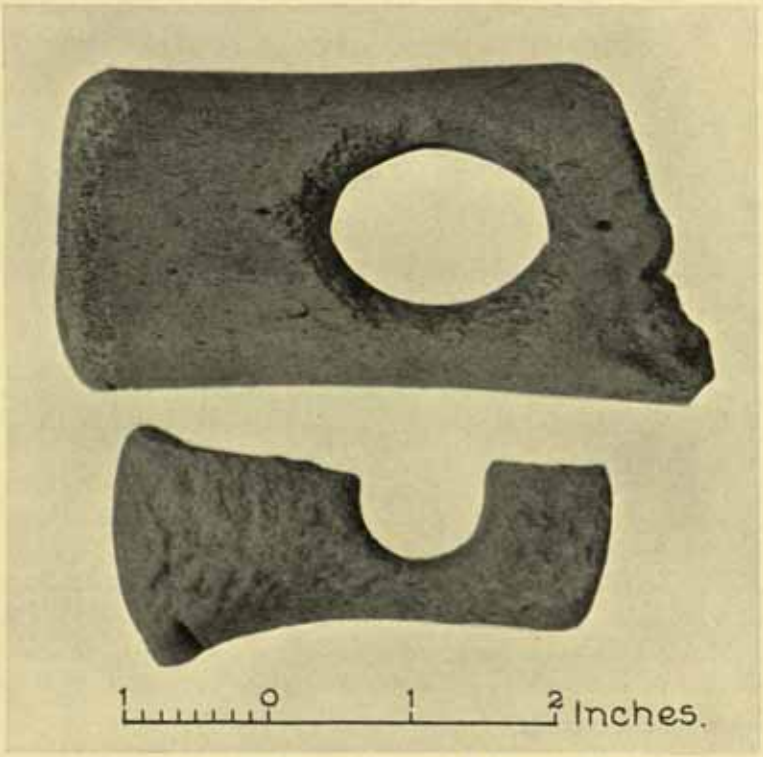


Fig. 4. Hower: Hammers of Cetacean Bone and Deer-horn.

measuring $4\frac{3}{4}$ inches by $2\frac{1}{4}$ inches by $1\frac{31}{32}$ inch, and nearly half of another of deer-horn measuring $2\frac{3}{8}$ inches long and 2 inches broad (fig. 4). One hammer-stone measuring $5\frac{1}{2}$ inches by $1\frac{1}{2}$ inch by $1\frac{1}{2}$ inch. One oval stone with indentations on top and bottom and sides. Stone, $6\frac{1}{2}$ inches by 5 inches by $\frac{7}{8}$ inch, with sharp inworked edge. One saddle-quern made of an irregular-shaped stone measuring 3 feet by 2 feet by 1 foot 6 inches. Two rubbers used for same. Nine flakes formed by splitting a thin water-worn stone, showing the hollow percussion on one side and end. Anvil stone made of a flattened conical stone measuring 3 inches by $2\frac{5}{8}$

inches by $2\frac{1}{8}$ inches, with picked indentations on top and bottom. Oval pebble, $5\frac{1}{8}$ inches by $2\frac{5}{8}$ inches by $2\frac{1}{8}$ inches, abraided on top and bottom and ends. Irregular shaped stone measuring $7\frac{3}{4}$ inches by $6\frac{1}{4}$ inches by $2\frac{3}{8}$ inches, with deep hollow picked on top—perhaps a lamp. Irregular shaped stone, $5\frac{1}{8}$ inches by $4\frac{3}{4}$ inches by $2\frac{7}{8}$ inches, with large hollow picked on top, small one on under side. Two spindle-like stones with one end worn by friction, measuring $6\frac{1}{8}$ inches and $5\frac{1}{8}$ inches in length,

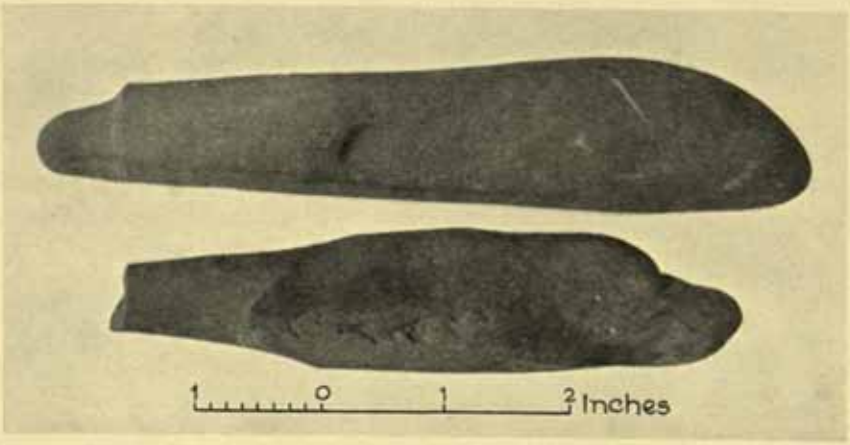


Fig. 5. Hower: Spindle-like Stones.

the second imperfect at the worn end (fig. 5). Several pieces of pumice, largest piece 4 inches by 3 inches by $2\frac{1}{8}$ inches.

Pottery.—Three rim fragments and wall fragments of a vessel of red clay, containing broken oyster- and limpet-shells (chiefly oyster-shells). Rim, flat on top, $\frac{9}{16}$ inch thick, and wall $\frac{7}{8}$ inch thick in parts. Found in midden used during a previous occupation, small rim of dark ware, very slightly round on top, with small projection to inside, $\frac{1}{2}$ inch thick, wall $\frac{3}{8}$ inch thick.

REPORT ON THE FLINTS. By A. D. Lacaille, F.S.A.Scot.

Flakes and Spalls.

1. Although *not* struck, the long edge has been utilised, probably as a knife.
2, 3, 4, and 5. These are "second" or "third" flakes; that is to say, they are not the first removals from a raw nodule, but have

been detached either from a core or from an implement in the making.

At first sight No. 5 appears fractured, but inspection shows break to be a hinged one. The partial surface alteration is interesting.

All the above (2 to 5) show normal phenomena of the intentional fracture of flint, but it is not possible to assert what percussor was used, *i.e.* stone, wood, bone, or metal.

Scrapers.

Possibly the chief point of interest in the scrapers 6, 7, and 8 is the amount of wear to which they testify. Viewing them technologically, 6 and 7 are particularly remarkable, No. 8 less so, as they consist of naturally fractured pieces of flint of convenient size, whose shape readily permitted of adaptation as round-edged scrapers by the most elementary of dressing. The ogival ending of No. 6, although much worn, strongly suggests a graver extremity opposed to the scraper, but this cannot be stressed.

7. This steep end-scraper shows extremely delicate pressure trimming.
8. Shows well the amount of surface alteration of this brown flint, the *corpus* exposed by primary dressing, which has been sufficient to give necessary working edge.
9. Thick spall humanly struck, but is not an implement.
10. A fragment of a flake, and
11. A small fragment of an implement secondarily trimmed.

As regards the period, it is regretted that there is nothing whatever by which one can tell as to what culture the specimens belong. Little can be said typologically, and the only guide will be the other relics with which the flints are associated.

It is not really possible to fix a monetary value upon these flints. As specimens of implements they are extremely poor, but as examples of artifacts worked in the simplest way possible they are scientifically very interesting.

REPORT ON THE ANIMAL BONES. By Margery I. Platt, M.Sc., Royal Scottish Museum, Edinburgh.

A collection of skeletal material excavated by Mr Traill and Mr Kirkness on this northerly placed island of the Orkney group was sent

to the Royal Scottish Museum for identification. With the exception of fragments of a whale's skeleton and a few bones of sea-birds, the whole of the remains represent animals domesticated by man. The relics are extremely well preserved, many have been buried in fine white sand and consequently have a clean white appearance. The bones found throughout the course of excavation (of which this collection is only a small part) were exceedingly numerous, and probably represent the remains of the food animals of an early human settlement. One fragment of a human skull, included among the rest of the bones, has been kindly examined by Professor A. Low, of Aberdeen University, who states that, although it is too fragmentary to classify, it is nevertheless not unlike the human skulls found in other Orcadian structures of neolithic date. The various species of animals found in the general material are recorded below in order of numerical importance.

Ox.

The bovine remains are an extremely numerous and interesting collection of bones. More than half are from very young animals. Unfortunately most of the relics from adults of large size are broken and, for this reason, it is of little use to record their measurements. Some fragments exceed in size the corresponding bones of the present-day ox, and approach closely the dimensions of those of the European bison now extinct. Notable fragments of massive size are the proximal portion of a radius, a sacrum, a lumbar vertebra, and a patella. This feature is also borne out by the many enormous horn-cores of a breed of very large cattle. It is to be regretted that in no case were the large horn-cores complete to the tip and that their full size therefore can only be a matter of conjecture. The small table below shows the size of the horn-cores of the Papa Westray breed of large cattle as compared with the horn-core measurements of the Urus from Scottish localities now preserved in the Royal Scottish Museum.

	Scot. Urus (R.S.M.).			Papa Westray.
	A.	B.	C.	
Minimum distance between horn-cores .	24·7	22·7	19·8	23·5 cm.
Distance between horn-cores on level of ligmentum nuchæ	27·5	27	19	25·4 ,,
Circumference of base of horn-core .	33·1	35·3	19·3	26 ,,

Other complete bones of the bovine skeleton are not so large as those mentioned above, and belong to one or other of the remaining smaller breeds indicated by the horn-cores. Characteristics in these,

denoting cattle of different types, are seen; one kind is not represented in Britain to-day, but was found in a broch on Rousay, also of course of prehistoric date.[1] This horn-core of cornute shape belongs to the *Bos frontosus* (*Nilsson*) type, being of rugose texture and with a thick collar at the base of it which characterises this variety. Its circumference at the base is 24·2 cm., and its length along the outside curvature 25·3 cm. A third breed present is reminiscent of the modern Kerry cattle, the core having a well-defined upward and outward curvature. Measurements of this are as follows:—

Minimum distance between bases of horn-cores	16·4 cm.
Distance between tips of horn-cores . .	34 ,,
Circumference of base	18 ,,
Length along outer curvature. . . .	26·3 ,,

A remaining type is typically that of *Bos longifrons* (*Owen*), with short curved horns separated by a high convex forehead. These cores are typically oval in transverse section for a greater part of their length, and in general size resemble the last-described breed (Kerry). Measurements are:—

Calculated distance between bases of horn-cores (about)	16·8 cm.
Circumference of base	18 ,,
Length along outer curvature . . .	22·2 ,,

All these types probably indicate an early domestication of cattle, but to assign to them their actual age is quite an impossibility.

Sheep.

At this site remains of sheep are also numerous, and animals representing all stages of growth from tiny lambs to adults with long slender lower jaws and a well-worn dentition occur. The variety represented has massive horn-cores and resembles the mouflon stock. Two skull fragments of a hornless adult sheep probably indicate the ewes of this breed. The horn-cores are strongly pitted, almost triangular in section, with the widest flat surface seen from the posterior aspect. They curve away from each other at an angle of about 45°, trending upwards and outwards, then slightly backwards and downwards. Horn-cores of very young animals show the same characteristic angularity.

[1] *Scottish Naturalist*, Jan.–Feb. 1933.

Pig.

Relics of this animal are but scanty. The material submitted here contained only part of a large skull, a small scapula, and a well-worn last molar tooth. It would seem, therefore, that both young and old animals are represented, and, from the abrased condition of the single tooth, that the beast was in a wild or semi-wild state.

Whale.

Many large fragments of bones of a whale (species unknown) occur.

Birds.

Indicated by the presence of stray bones, the birds represented are: the eider-duck (*Somateria m. mollissima* (L.)), the cormorant (*Phalacrocorax c. carbo* (L.)), the common gull (*Larus c. canus*, L.), the gannet (*Sula bassana*, L.), and a swan, probably the Whooper (*Cygnus cygnus*).

Shells.

Shellfish of various kinds had probably been utilised as food, according to the numerous shell remains present. These include winkles (*Littorina littorea* (L.) and *L. obtusata* (L.)), oysters (*Ostrea edulis*, L.), mussels (two kinds: the edible one *Mytilus edulis*, L., and the horse-mussel *Modiolus modiolus*, L.), one small "buckie" (*Buccinum undatum*, L.), a small cowrie (*Cypræa europæa*, Mont.), and lastly a shell allied to the venus shell (*Dosinia exoleta* (L.)).

Included in the material just recorded is the portion of human skull referred to already in the introduction.

Bones from a large hole in the floor of Chamber 3 in smaller building.

Here sheep and ox remains are represented in equal proportions. Those of the former are from young and matured animals. One complete metacarpal has on the surface innumerable tooth impressions resembling those of a dog. No bones of the latter have been found in this material. The few bovine relics in this section are all from immature beasts.

Bones from a small hole in Chamber 3 in smaller building.

These for the most part are remains of very young ox. A few ribs, a metatarsal, and terminal facet of a femur alone represent immature sheep.

In conclusion, I am indebted to Mr William Traill for forwarding the skeletal material found at Hower for examination here, and for kindly allowing the Royal Scottish Museum to incorporate them in the cabinet collections of sub-fossil material from Scottish sources.

MONDAY, 12*th April* 1937.

SIR GEORGE MACDONALD, K.C.B., President, in the Chair.

A Ballot having been taken the following was elected a Fellow:—

Mrs H. NUGENT YOUNG, 10 Onslow Court, Drayton Gardens, London, S.W. 10.

The following Donations to the Museum were intimated, and thanks voted to the Donors:—

(1) By J. A. CARFRAE, 3 Queen Street, Edinburgh.

Two Old Dutch Grate Tiles taken from the Duke of Gordon's House on Castlehill, Edinburgh, when it was pulled down.

(2) By Major HARRY H. HEBDEN, M.C., of Eday.

Collection of Neolithic and Iron Age Pottery, and other Objects found at Calf of Eday, Orkney. See previous communication by C. S. T. Calder and J. Graham Callander, LL.D.

(3) By Dr W. A. MUNRO, F.S.A.Scot.

Two fragments of a star-shaped Bead of blue vitreous paste, found on Dryburgh Mains, Berwickshire, by the donor.

(4) By WILLIAM BROOK, F.S.A.Scot.

Twenty-six Communion Tokens of various parishes.

(5) By Miss CHRISTIE, F.S.A.Scot., of Cowden.

Candle and Rush-light Holder of Iron on a wooden pedestal. Smiddy-made Roasting Fork on a sliding standard of Iron.

The following Donations to the Library were intimated and thanks voted to the Donors:—

(1) By HIS MAJESTY'S GOVERNMENT.

Calendar of State Papers relating to Scotland and Mary, Queen of Scots, 1547–1603. Edinburgh, 1936.

Register of the Privy Seal of Scotland, vol. iii., A.D. 1542–1548. Edited by the late D. Hay Fleming, LL.D., and James Beveridge, M.A. Edinburgh, 1936.

(2) By Miss WHYTE, Bennan, Prestwich, Manchester, through Donald S. Macdonald, W.S., F.S.A.Scot.

The New Picture of Edinburgh for 1818. Being a correct Guide to the Curiosities, Amusements, Public Establishments and Remarkable Objects in and near Edinburgh. To which is added a Description of Leith and the Trossachs. Edinburgh, 1818.

(3) By Sir GEORGE MACDONALD, K.C.B., President.

Scandinavian Archæology. By Haakon Shetelig and Hjalmar Falk. Oxford, 1937.

(4) By Professor V. GORDON CHILDE, D.Litt., F.S.A.Scot., the Author.

The Antiquity of the British Bronze Age. Reprinted from *American Anthropologist*, vol. xxxix., No. 1, January–March, 1937.

(5) By THE DIRECTOR, Russell-Cotes Art Gallery and Museum, Bournemouth.

Bulletin. Vol. xvi.

(6) By R. CUNLIFFE SHAW, M.Sc., L.R.C.P., F.R.C.S., F.S.A.Scot., the Transcriber and Editor.

The Clifton Papers: A Miscellaneous Collection of Papers referring to the Districts of Kirkham and Lytham in Amounderness. Including a Sixteenth-century Rental of Sir Richard Molyneux of Sefton. Preston, 1935.

The following Communications were read:—

I.

EXCAVATION OF A MEDIEVAL SITE ON DONALD'S ISLE, LOCH DOON, AYRSHIRE. By ARCHIBALD FAIRBAIRN, F.S.A.Scot.

Of Donald's Isle, the following notice appears in Smith's *Prehistoric Man in Ayrshire*, p. 186—Straiton District:—

> "On the west side of Loch Doon, two miles north of the Castle, there is an island called Donald's Isle, a moraine of granite blocks and debris, and on it there are two structures called Monks' Graves.
>
> "Both are formed of boulders and are hollow in the centre, and although called graves, they may have been Monks' cells; some of the Monks having probably been buried in or near them.
>
> "When they were opened, several relics of antiquity were obtained, including a bit of red and yellow bead, a polished stone, fragments of pottery, bits of iron, etc."

The writer has no knowledge of who opened those so-called "graves," nor of what became of the relics recovered at that time.

His attention was called to the site by the late Mr W. R. Stewart, F.S.A.Scot., of Merrick, Dalmellington, who had a thorough knowledge of the district and in whose company the site was visited.

Donald's Isle is near the west shore of Loch Doon, and is of no great extent, measuring in length, when the waters of the loch were low, 190 paces north and south, and in breadth 95 paces east and west. The structures in question occupy the highest point of the island, which takes the form of a slight ridge, running north and south, with the ground sloping gently from the crest on every side.

It was seen that the lay-out of the site was cruciform on plan, and although this may have been quite fortuitous, yet it is in keeping with the site's association with monks. The structure at the south end, or head of the cruciform arrangement, resembled a large oval-shaped cairn, heavily banked all round, except on the west, with massive boulders overgrown with heather. The centre was hollow, while the line of the structure lay due east and west. To the north, at a distance of 10 feet, the shaft of the cruciform lay-out was a large stone structure showing above the turf, the whole interior filled with soil and overgrown with grass.

It was noted that the east wall of this structure was massively banked and heather-clad, while on the west side the surface of the ground was more or less flat, and carried a green sward. The orientation of the building was due north and south.

The base of the lay-out, immediately north of and attached to the central structure, was an artificially flat area, the chief interest of which lay in its level appearance and grass-grown surface within a framework of heather—a sure sign of the effects of spent ash from the fires of occupation of long ago. Near by, on the west front, where a narrow channel of the loch separates the island from the shore, there is still to be seen the foundation boulders of an ancient jetty, 33 feet in length and 9 feet wide, but now well above the high-water mark of the loch.

It was ascertained that, many years ago, the level of the waters of the loch had been considerably lowered, and a portion of the shore laid bare, by the combined operations of the proprietors in having the rocks at the outlet blasted and the channel deepened. Following this operation, the erection of sluices regulated the discharge, which in turn prevented serious flooding of valuable meadows along the course of the River Doon, which issues from the loch. This is mentioned to suggest that previous to this undertaking Donald's Isle would in all probability be permanently an island.

Since then, in times of prolonged drought, the narrow channel on the west side, between the island and the shore, is dry, or nearly so, while in wet seasons, and during the winter months, the flooded loch still provides a defensive deep-water moat for the site, of from 50 to 80 yards in width. On all other sides, at all seasons, the loch surrounds the island as from the earliest times.

The writer has been unable to glean any information, historical or otherwise, which would explain the reason for the island's name of "Donald," and no mention is made of it in "A List of Place-Names" of the district between the years 1547 and 1800. In the midst of a district where Celtic place-names are common, he strongly suspects that modern usage has been at work with the name of this small isle. Every land-name has a meaning, or once had, usually appropriate and descriptive, when not modernised out of keeping with the original meaning. In the Gaelic, a language common in Ayrshire in early times, as may be realised from the wealth of Gaelic land-names within the county, we have dun and dúnan—a hill or fort, or both combined. There is, however, no hill on the island, and, apart from the defensive advantage of the surrounding loch, neither is there any visible signs of a fort in ditch and rampart. Getting slightly nearer to Gaelic-speaking times

in Ayrshire, we have the seventeenth-century map of Carrick by the Rev. Timothy Pont, and here the island is named "Ylen Donan," or Island Donan. In pronunciation and in meaning this is almost identical with an Eilean Donan farther north. Pont doubtless took the name as he heard it pronounced in the district. In modern usage it would be an easy transition from "Donan" to "Donald," easier because there seems to be no local history nor tradition to support the latter name. There are many Donans in the west of Scotland, beginning in Wigtownshire, through Carrick in Ayrshire, and continuing as far north as Ross-shire, Caithness, and the Hebrides. These sites are chiefly Kildonans —meaning church of Donan, or dedications to Saint Donan—and Eilean Donan—island of Donan, or Donan's Isle. Many of these primitive ecclesiastical sites are characteristic of the early missionary practice of choosing an island, however remote, as safe headquarters for the time being. Bearing in mind this ancient custom, and the island's reputed association with monks, it was thought desirable that the site should be excavated.

As Loch Doon was to be raised to a higher level as a storage loch for water-power, and, in consequence, the island in question would possibly become submerged, leave to excavate was readily granted by the proprietor. The Most Hon. The Marquis of Ailsa and a small party of voluntary excavators commenced operations on the 17th June 1933, continuing the work at intervals, till the final visit on 21st August 1936.

It has already been noted that the immediate west front of the site, looking across the narrow channel to the shore, was grass-grown, beyond which the ground was heather-clad; this, with the presence of the ruined jetty, enabled the excavating party to decide that here was the original frontage and line of approach.

It was expedient to have the earliest evidence as to the nature of the large oblong structure which formed the centre or shaft of the group, and which at the moment measured outwardly 52 feet in length and 20 feet in breadth, and a gap in the west wall, just appearing through the sward, provided this opportunity (fig. 1). The turf was taken up over a large section in front of the opening and the soil underneath trenched over.

Almost with the lifting of the first turf a sherd of medieval pottery was obtained, to be followed by many fragments of a similar kind. The pottery lay at a depth of from 9 to 18 inches, and for the most part within short range of the opening in question, which proved to be the only entrance to the structure. All the pottery fragments were unmistakably medieval and domestic, and they represented several vessels, as

seen from rims and handles. Several fragments carried a faint greenish glaze, others were buff-coloured, and some were dark brown, and almost all were without decoration.

The trenching was continued down to undisturbed soil, and carried forward through the entrance, which was cleared out along with a section of the interior. Here, from under a depth of fully 2 feet of loamy soil, foreign to the island, a more or less level floor was exposed, and from this portion of the floor several flakes of flint of different colours were obtained. The floor was strewn with charcoal and stained

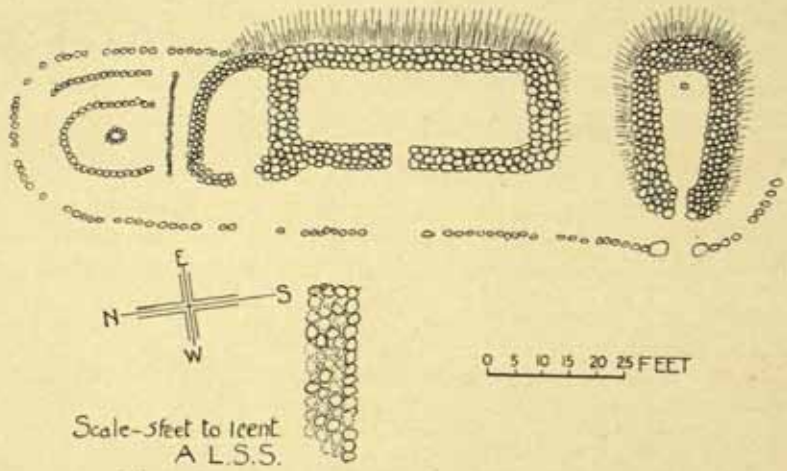


Fig. 1. Plan of Structures on Donald's Isle, Loch Doon.

with peat ash, traces of this continuing through the entrance to the ground outside.

A trial trench was now opened over the flat area north of and adjacent to the large structure, and here the soil under the turf was unmistakably that of occupation, dark in colour and plentifully intermixed with charcoal and peat ash, with a sprinkling throughout of burnt bone—probably domestic.

It was on the third visit to the island that the excavating party concentrated on the excavation of the lesser stone structure at the head or south end of the site. At a point 13 feet west of the centre of the structure, two large stones just appearing above ground lay fully 2 feet apart. At 12 feet outwards from these, two conspicuously large boulders were sufficiently wide apart to suggest an entrance. The turf was removed beyond the two outer boulders and this section was carried up to and over the two inner ones. Each turf was very carefully examined

for relics adhering to the roots of the under portion, and the excavators were well repaid by observing this rule. Many large fragments of a grey or buff-coloured ware were obtained over this section, where the pot-sherds were outstandingly thicker and belonging to larger vessels of a more substantial quality than the pottery recovered elsewhere over the whole occupied area.

It was surmised, as the soil increased in depth on approaching the two inner stones, that these were the portals of a passage leading into the structure; and so it proved to be. Within this passage, and 18 inches above the original passage floor, a silver penny of Edward I. was picked up from the loose soil. On identification, it proved to have been minted in London in 1260, and from its position, so far above the floor-level, the structure must have been in a ruinous condition long before the coin was lost.

The passage was completely filled with soil, evidently from walls and roof-covering, as well as with heavy boulders fallen inwards, and the whole interior, of what eventually proved to be a hut-dwelling, was in a similar condition; a second attempt had to be made before the interior was successfully cleared out. The dwelling exposed was of considerable interest, resembling in several details the Bronze Age hut-circles discovered and excavated at Muirkirk.[1]

The level floor was of compacted clay, and the fireplace, which was near, but not against, the end wall, was a hole in the floor, measuring 2 feet in diameter and 1 foot deep. Out of this the writer removed the remains of the last fire—as he did those of the hut-circles—and found that the residue consisted of charcoal of wood and peat ash. Several kerb stones remained on one side of the fireplace, which was very similar to the cooking-holes of the Bronze Age dwellings above referred to, while the customary flat stone hearth of medieval habitations was not in use.

The primitive dry-stone walls, rudely but strongly built, had their foundations laid on virgin soil. The walls were still about 4 feet in height, and banked on the outward side to a width varying from 8 to 12 feet. The greater width faced the eastern exposure and the wide expanse of the loch.

The internal plan of the dwelling resembled a big-bellied bottle laid on its side—straight at the far end and gradually closing in towards the long narrow entrance. The measurements of the interior are as follows: the width of the chamber across the end wall is 9 feet, across the centre 8 feet, closing in to 7 feet, and gradually closing to 5 feet

[1] *Proc. Soc. Ant. Scot.*, vol. lxi, p. 269.

at the inner end of the passage. The length of the chamber is 15 feet, to which may be added the length of the passage, 6 feet 6 inches, giving a total length of 21 feet 6 inches. The width of the passage is 2 feet at the portal and 2 feet 3 inches on entering the chamber. Doubtless, when the dwelling was in occupation, the rafters had been covered with turf, and doubtless also, the dry-stone walls had several feet of turf built on them above the stonework. This custom, a practical one, still prevails in the maintenance of outlying sheep-bughts in moorland districts. The turfs or divots are lighter to handle and safer to build above the height of from 4 to 5 feet as compared with heavy rounded boulders—where there is no other choice—as these are liable to get dislodged and fall, probably with disastrous results. It is difficult to account in any other way for the great accumulation of soil which had lodged within the dwelling, as here wind-blown soil may be ruled out, since the waters of the loch closely surround the site, and the island is destitute of sand, being wholly composed of granite debris.

With the exception of the silver coin, one fragment of pottery, and several flakes of flint, no relics were obtained within the dwelling. The occupation layer of the floor was carefully trowelled over and scrutinised, and it was also ascertained that no earlier floor lay beneath.

So far as the excavation had gone, sufficient evidence had been forthcoming to prove that the site at both extremities had been occupied as dwellings; and now the exploration of the central structure remained to be completed.

To clear out the vast accumulation of earth and fallen boulders within its interior was a formidable task, yet to do anything less was to hazard the loss of valuable evidence. The voluntary excavating party, having no appliances for removing the debris clear of the excavation, fell upon the plan of first carefully trenching the ground to undisturbed soil outwith the walls, and then depositing the debris from the interior on the trenched and explored ground outside, where each spadeful was carefully examined by a member of the party. In the trenching operations outwith the structure it was discovered that the ground between the hut-dwelling and the south end of the large structure held quite a deep deposit of peat ash and wood charcoal from the cooking-hole fireplace in the hut-dwelling. The trenching was continued along the whole west front of the large structure, and this exploration yielded occasional fragments of pottery and several much-corroded and unrecognisable objects of iron.

It was only after several attempts had been made, involving much heavy labour, that the interior of the large structure was finally cleared

out down to floor-level. It was now possible to take the following accurate measurements: internal length and breadth of the structure, 43 feet and 12 feet 4 inches; external length and breadth, 53 feet and 20 feet (fig. 2).

There is only one entrance, 3 feet wide, through the west wall, which is 4 feet in thickness. This entrance is not in the centre, but 22 feet from the north and 28 feet from the south end of the wall. The rear

Fig. 2. Oblong Structure, Donald's Isle, Loch Doon.

wall, facing the eastern exposure, is banked to a width of fully 10 feet, in like manner to the east wall of the hut-dwelling.

The floor was of compacted gravelly subsoil, and was from 12 to 18 inches below the level of the foundation boulders, all of which had been laid on soil of an earlier occupation, as seen from much charcoal of wood in the dark-coloured loamy soil beneath the foundations. The floor-level was very carefully examined with spade and trowel over the whole interior, and a minute search was made to the undisturbed soil beneath. It was then discovered that there were neither constructed hearths nor a cooking-hole fireplace within the whole interior. Neither were there any divisional foundations, nor any vestige of partition walls, even of wicker-work and clay. A few feet inwards from the entrance, and beside an earth-fast boulder, which rose above floor-level, a fire had burned, which was seen from scorched earth and charcoal remains; it was carefully noted that this fire had been laid several inches above the

original floor. The primitive dry-stone walls, rising over massive foundation boulders of granite, had, when cleared, a present height of nearly 4 feet. They still carried three to four courses of somewhat crude building, more or less intact, and they were free from lime or clay, and showed no traces of tool-marks of any kind.

The absence of hearths, constructed or otherwise, within the interior, and the absence outside the entrance of any deposit of spent ash, as well as the conclusive evidence of a large and entirely open interior, is not in keeping with a structure originally intended to be a dwelling, or which had been in use as one. Yet the walls at their foundations were fully 5 feet in thickness, in stonework alone, suggesting a place of substantial security, but very different in point of view from the snug hut-dwelling, with its narrow entrance, suggestive of warmth and comfort. The relics recovered from the interior were surprisingly few. Inwards from the entrance, they included fragments of a thinnish medieval ware, a stone disc or pot-lid, and some flakes of flint. Near the north end of the interior, a segment of an armlet of opaque yellow glass was discovered above floor-level, having probably been moved by the former opening of the site.

The excavating party now concentrated on the level area already referred to, measuring 41 feet north and south, and 38 feet east and west, extending outwards from the north end of the larger structure, which area formed—so to speak—the base of the cruciform lay-out of the site.

Here, there was no vestige of the remains of walls in stonework, nor in the accumulation of soil from decayed turf walls; the surface was perfectly flat, yet a practised eye could trace a slightly raised line on the sward, which proved to be a stone setting bordering this area, extending thereafter in a line along the whole west frontage up to, and beyond, the two large boulders referred to in front of the hut-dwelling.

On removing the turf over a large section, a double line of stones came to view, occupying in horseshoe formation about half the measured space.

Beyond these, there was a single line of stones running parallel with the margin on the east side. In the centre of the double row a large flat stone was exposed, supported by lesser stones, and all of them free from fire-stains or marks of burning.

These were taken up and the ground underneath tested to virgin soil.

It was evident that this group of stones had carried a central roof-tree and that the lines of stones in question had formed the foundations for timber structures.

This surmise was supported by the finding of many rust-corroded, large, flat-headed iron nails in the surrounding dark-coloured soil of occupation. Over the portion next to and abutting on the north end of the central structure, a wall 2 feet in width was exposed, and cleared to its full length of 17 feet, forming an annex 11 feet 6 inches in internal width, and opening to the west. It was seen, from the depth of fine soil intermixed with charcoal, which lay beneath the foundations, that this wall had been of secondary structure.

A passage 3 feet wide, and of equal length to the wall and running parallel with it, had on the outside margin a kerb of rough stones to mark it off, beyond which the timber structures would stand.

Close to the front of the annexe, and beneath ground-level, a deep deposit of spent ash from burnt peat and wood was exposed.

The iron relics recovered over this area included a socketed leaf-shaped arrow-head, a much-corroded tanged knife or dagger blade, a bolt or pike-like object pointed at one end and squared at the other, a fragment of a pot showing a mend neatly executed with bronze, as well as many large nail-heads and pieces of iron slag.

The medieval pottery fragments included a large handle, many sherds of a light buff-coloured ware, and a fragment of a brown rim with a double lip, all of which were of a plainer type as compared with the pottery from the stone structures.

All timber on the site had completely decayed, or it may possibly have been destroyed by fire.

An interesting relic in the form of a rounded freestone sharpener was discovered during the excavation of the annexe. It is unique in having three slightly raised and smooth ridges for sharpening purposes, and between the ridges the stone is roughened and dotted by tool-marks. Three short and smooth whetstones of primitive type also were recovered.

Of flints and chert, upwards of 120 flakes and chips were picked up from the occupation layer, and also rain-washed out of the loose soil.

Several of the flints had been worked, and these may be referable to an earlier occupation, evidence of which was found in the nature of the soil underlying the foundations of the central structure.

The pottery fragments, after a lengthy period of drying in sun and wind, and after cleaning with a soft brush, were then found to be almost wholly without glaze and for the most part of a bluish grey and buff-colour. As already noted, the pottery associated with the stone hut-dwelling—the foundations of which rested on virgin soil—was of a thick and heavy type, somewhat soft in texture and representing vessels of large size. That of the central structure was less substantial, but still of a superior

class as compared with that recovered from the site of the timber structures.

It was from these two latter sites that the few fragments of slightly glazed pottery were obtained.

The general excavation of the whole occupied area yielded—with the exception of a small segment of an armlet—no personal ornaments of any kind, nor evidence of medieval glass, nor of beads.

The tradition which associated the site with "monks' graves" was happily refuted, nor were there any visible evidences of sepulchral rites anywhere on the limited available ground of the island.

There was nothing to be seen to indicate the means of livelihood of the original occupiers, since there was neither soil for cultivation nor room for the grazing of livestock on the island.

It is significant that no relics pertaining to agriculture were obtained.

Neither were there signs of early cultivation on the moorland of the near-by shore, where granite boulders, peat, heather, and bog-myrtle still remain in primitive state.

Surrounded by the waters of the loch, the occupiers of the island may be absolved from any idea of an agricultural life in such an inconvenient situation.

If we accept tradition, a better guide than inaccurate history—or the want of it—we may reasonably regard the site as that of "monks' cells," chosen for remote security, in common with the ecclesiastical customs associated with monks in early missionary times. It has been pointed out, however, that the orientation of the site is not in keeping with this custom; but it was clearly seen by the party of excavators that no other orientation was possible, otherwise both extremities of the occupied area would have been flooded by the loch at high water.

After three years' digging at intervals, and in the absence of inscribed and tool-marked stones of any kind, it has been deduced from general observation on the ground, and from the relics recovered, that the primitive but strongly built stone hut-dwelling had been originally the headquarters of the site.

The large central structure, with its open interior and absence of hearths, represented, to the writer, not a dwelling but an early missionary church for the followers of some faith; just as the massive stone structure itself suggests the handiwork of the followers of a strong and inspiring leader.

The level area, with its timber dwellings, was possibly the quarters of those followers, as may be deduced from the nature of the relics obtained from it. A parallel can be found on the island of Eigg, where,

at the martyrdom of Saint Donan, the primitive church, we are told, was a stone structure, and the refectory one of timber, into which, after leaving the church, Saint Donan and his followers retired, and which was set on fire by the Scandinavian pirate assassins.[1]

On the island of Iona, the actual site of Saint Columba's original church is as yet unknown,[2] and when discovered, and excavated, a new light may be thrown on early missionary establishments.

Bearing in mind the tradition still surviving in the district, associating monks with this island on Loch Doon, the "Ylen Donan" of Pont, those medieval structures may very well have been a monks' missionary establishment, and, in this respect, in keeping with similar island sites along the west coast of Scotland and on the Western Isles.

The excavating party would wish me to record their deep sense of gratitude for the hospitality extended to them at 'Merrick' by the late Mr W. R. Stewart, F.S.A.Scot., whose interest in the excavation was a great source of encouragement.

To Miss A. L. Shaw Smith for preparing the accompanying plan of the site, and to Professor M. Stewart for the loan of early maps of Loch Doon district, my grateful thanks are due.

I desire also to express my appreciation of the zeal and enthusiasm of the excavating party, consisting of Mr J. M'Crindle, J.P., Mr A. G. M'Leod, M.A., F.S.A.Scot., Mr Wm. Macintyre, F.S.A.Scot., and Mr Mair, whose untiring efforts brought the work to a successful completion; and my thanks are due also to Mr Campbell of Beoch Farm, Loch Doon, to Mr Armour for the use of his fishing coble, and to many friends who took a helpful interest in the excavation.

[1] *Archæological Light on the Early Christianisation of Scotland*, G. A. Frank Knight, M.A., D.D., F.R.S.E., F.S.A.Scot., vol. ii. p. 100.

[2] *Antiquity*, O. G. S. Crawford, December 1933, p. 453.

II.

KARL HUNDASON, "KING OF SCOTS."

By A. B. TAYLOR, D.Litt., F.S.A.Scot.

The extent of the contribution of the Old Icelandic Sagas to Scottish history has been fully demonstrated by Mr A. O. Anderson in his monumental *Early Sources of Scottish History*, published in 1922. The historical value of these contributions is often difficult to assess, but they are always of interest; and they cannot be dismissed lightly when they are at variance with Scottish sources, for there is every reason to believe that most oral sagas were composed soon after the events they describe, and that the commemorative verses they contain were often made on the scene of action. Such difficulties as occur are due partly to the length of time during which the sagas were handed down by word of mouth before being committed to writing, and partly to the Norseman's notion of Scotland as a remote country, usually worth plundering, but not by any means one of first importance. In the following study of the identity of *Karl Hundason*, "King of Scots," these considerations have been kept in mind.

I.

Karl Hundason—Karl, son of Hundi—is mentioned as a "King of Scots" in chap. 20 of the *Orkneyinga Saga*, but is quite unknown to any other historical source—Scottish, Irish, English, or Scandinavian. Yet his name *Karl* and the fact that he led an army of Scots and Irish against the Orkney Earl Thorfinn at *Torfnes* or Tarbatness are well attested by the verses of the contemporary court poet Arnor which are quoted in the *Saga*. The controversy regarding his identity is no new one. P. A. Munch identified him with Malcolm II., Kenneth's son (1005–34); W. F. Skene with the latter's successor, Duncan Crinan's son, who was murdered by Macbeth in 1040.[1]

[1] See W. F. Skene, *Highlanders of Scotland*, chap. 5, and *Celtic Scotland*, vol. i. pp. 400 ff.; W. Robertson, *Scotland under her Early Kings*, vol. ii. p. 477; P. A. Munch, *Norske Folks Historie*, vol. i. part 2, p. 854; E. Rhys, *Celtic Britain*, p. 260; G. Henderson, *Norse Influence on Celtic Scotland*, p. 28; J. Storer Clouston, *History of Orkney*, pp. 40–44; J. Anderson, *Orkneyinga Saga*, pp. 17–18; A. O. Anderson, *Early Sources of Scottish History*, vol. i. pp. 577–8; etc., etc.

My excuse for the following study is that there is additional evidence to be considered, and that a fresh solution seems possible. I should add that the lines along which inquiry has been made were suggested to me by the brief note on Karl in Mr Anderson's *Early Sources* to which I have referred.

II.

We may profitably study first Karl's dates, and thereafter examine the main facts of his career.

According to the *Orkneyinga Saga*, a certain *Melkolmr Skotakonungr* or "Malcolm King of Scots" died "in the year of the reconciliation of Thorfinn and Brusi," the Orkney earls, and was succeeded by *Karl Hundason*. In the previous chapter of the *Saga* we learn that this reconciliation took place "when Knut became King of Norway and Olaf went into exile," an event which from Norwegian sources we know to have occurred in 1029.

As to his death, the *Saga* is uncertain whether or not it took place at the battle of Tarbatness referred to. But the events narrated in the chapter do not cover more than a year or two, for—as the last sentence of the chapter shows—they occurred before the death of Earl Brusi at some date not later than 1035.

If this "Malcolm King of Scots" is Malcolm II., Kenneth's son, then *Karl Hundason* ought to be his successor Duncan, the son of Crinan, lay abbot of Dunkeld. And an attempt to equate his curious Old Icelandic name with that of this well-known Scottish king was made by A. MacBain in an article in *The Northern Chronicle* quoted in Henderson's *Norse Influence on Celtic Scotland*, p. 28. *Karl*, "a man," he argued, is a literal translation of the first element *dune* in Celtic *Duncadh* (Duncan). *Hundi*, "a dog," is obviously a translation of Celtic *Cuilean*, the name of several Scottish chiefs or *mormaers* in the tenth and eleventh centuries; the Scots Earl Hundi who fought against Earl Sigurd the Stout in *Njáls Saga*, chap. 86, was probably called *Cuilean* in Celtic. Confusion between *Crinan* and *Cuilean*, MacBain suggested, possibly gave Karl the erroneous surname of *Hundason*.

The chief objection to MacBain's theory is that there is already an Old Icelandic form of *Duncadh* in *Dungaðr*, which occurs in *Orkn. Saga*, chaps. 33 and 46. There can be little doubt, however, that the names *Cuilean* and *Hundi* are identical.

But, etymology apart, there are serious chronological difficulties which make it impossible to identify Malcolm and Karl with Malcolm II. and Duncan. Even if we assume that the *Saga* is in error in the date

of Karl's accession (giving us the year 1029 instead of 1034), there is insufficient time between 1034 and 1035 for the lengthy campaigns of his war with the Earl of the Orkneys. A chronological error at the other end seems equally unlikely, for these campaigns appear to have been concluded some time before the arrival in the Orkneys of Rognvald Brusi's son to claim his inheritance. This is described in chaps. 21 and 22 of the *Saga* and occurred fairly certainly in 1037 or 1038. Further, the very careful chronology of the *Orkneyinga Saga* is upset if the events of chap. 20 are pushed forward from the period 1029–35 to the period 1034–38. We are driven to the conclusion that these two *Saga* "Kings of Scots" were not "Kings of Scots" at all, but were mere chiefs or *mormaers* of one or other of the northern provinces of Scotland. It is not the saga-man's chronology that is at fault, but his knowledge of the geography and political divisions of what to him was a remote country.

III.

I now proceed to a brief account of the career of Karl as given in *Orkn. Saga*, very largely to show how, except in one or two particulars, it is consistent with his being a ruler of one of these northern provinces —Moray, or Ross, or Argyll, for example. In particular, it will be noted that the journeys made would be much too great if it is assumed that Karl was a King of Scots having his headquarters in Lothian or in the Lowlands of Scotland.

On his accession in 1029, according to *Orkn. Saga*, Karl immediately laid claim to Caithness. Caithness was then part of the Orkney earldom, having been granted in 1014 to Earl Thorfinn by Karl's predecessor, the so-called "Malcolm King of Scots," who was Thorfinn's grandfather on his mother's side. (It may be mentioned that Caithness had been the buffer state between the northern provinces of Scotland and the Orkney earldom ever since the establishment of the latter in the ninth century; see *Orkn. Saga*, chaps. 5, 10, and 11.) Karl took the step of sending a nephew of his called *Muddan* [1] to conquer Caithness. We are not told anything as yet of Karl's headquarters, but we learn that Muddan raised a force in Sutherland and invaded Caithness according

[1] The name seems to be related to that of *Maláin mac Caerill* mormaer of (?) Buchan, *Book of Deer*, p. 92. Variant readings of the name are *Mumlan* and *Mulalan*. The latter form lends support to Sir W. A. Craigie's derivation of the name—from Old Irish *Modudhan* (*Zeitschrift für Celtische Philologie*, vol. i. pp. 439 ff.). The name also occurs as that of a wealthy Caithness chieftain of the twelfth century (*Orkn. Saga*, chap. 53), the spellings in this instance being *Moddan* *Muddan*, and *Maddan*. *Muddan* is the form occurring most frequently, and is accepted as the right one in both cases by the present writer.

to plan. What followed is so typically described in the *Saga* that I feel I must quote it in full:

> "Thorfinn then marched against Muddan, and he had the larger force. And when the Scots saw that they had the smaller force, they were less anxious about fighting, and rode back up into Scotland. Earl Thorfinn pursued them and subdued Sutherland and Ross and harried far and wide over Scotland. Thence he returned to Caithness . . . [and] took up house at Duncansby and kept five warships there, with just enough men to keep them ready for sea."

Muddan, we are now told, went to King Karl at a place called *Beruvík*, and told him how his expedition had gone anything but smoothly. Of the identity of *Beruvík* I shall say nothing in the meantime, except that it can hardly be Berwick-on-Tweed (as in *Orkn. Saga*, chap. 93) or Berriedale (as perhaps in *Orkn. Saga*, chap. 94), for the former is too far away and the latter is too near to the scene of action. I shall return to this name later.

In spite of the failure of the attack on Caithness, Karl was undaunted. A second attack was prepared. At *Beruvík* he had eleven warships fitted out, and while Muddan again led an army overland Karl himself took his fleet "North round the coast of Scotland." (It may be noted in passing that the phrase "North round the coast of Scotland"—*norðr fyrir Skotland*—is more applicable to a voyage to Duncansby from the west of Scotland than to one from the east.) Thorfinn, however, happened at the critical moment to be sailing over to the Orkneys with his fleet, and the two parties met off the peninsula of Deerness. But Karl had no better luck at sea than Muddan on land, for after a stiff fight he had to take to flight, with Thorfinn in pursuit. He made for the Moray Firth, where Thorfinn appears to have lost him. Thorfinn, at any rate, spent some time harrying round the coasts of the Moray Firth, while his lieutenant Thorkell Fosterer went North to Caithness, made a surprise attack on Muddan, and killed him.

The narrative again goes back to Karl and tells us that he raised a fresh army for a third attack upon Earl Thorfinn. I quote directly again:

> "Now it must be told of King Karl that he went up into Scotland after his battle with Earl Thorfinn and gathered a fresh army. He raised the army from the whole of the South of Scotland, both from the East and from the West, and South as far as Cantyre. And there came to join him that army from Ireland which Muddan had sent for. He sent far and wide to chiefs for forces and the whole army he summoned against Earl Thorfinn and they met at *Torfnes* (Tarbatness). . . . There was a great battle, and the Scots had by far the larger army. Earl Thorfinn was in the van of his troops; he had a gilded

helmet on his head, he was girt with a sword, and he had a great spear in his hand which he wielded to right and left. So is it said that he stood foremost among all his men. First he charged the Irish ranks, and so fierce were he and his men that they at once gave ground before him and never regained it. Karl then had his standard borne against Thorfinn. There was then a great struggle, and the upshot was that Karl took to flight; but some men say that he was killed. . . . Earl Thorfinn continued the pursuit far up into Scotland; and thereafter he marched far and wide throughout the land subduing it. He went South as far as Fife and laid the land under him. Men yielded to him wheresoever he went."

Soon after, however, Thorfinn returned North and took up residence unmolested in Caithness. And nothing more is told of Karl.

I have just two observations to make about the place-names referred to. The identity of *Torfnes* and *Tarbatness* on the south side of the Dornoch Firth is fully attested by its being described in a verse of Arnor's in this chapter as being south of the River Oykell; and Tarbatness, it will be noted, would be a natural meeting-place for forces of men coming from Ross, Moray, Argyll, and (through Argyll) from Ireland. The mention of Fife, however, presents difficulties. An overland journey by Thorfinn to Fife is an improbability. The explanation may well be that at some time or other Thorfinn went on a plundering expedition to Fife by sea and that the episode has been wrongly attached by the saga-man to the *Karl Hundason* story.

Except, then, for this mention of Fife and for the reference to Karl's obtaining forces from the east of Scotland, the whole narrative is consistent with the idea that the struggle of Thorfinn and Karl is a continuation of that which had been waged since the end of the ninth century by the Orkney earls, notably Sigurd Rognvald's son, Ljot, and Sigurd the Stout, against the princes or *mormaers* of Moray, Sutherland, Ross, and Argyll, and that, in fine, Malcolm and Karl were *mormaers* of one of these four provinces. The erroneous *Saga* title of "King of Scots" might be explained on the analogy of the similarly erroneous title of *Ri Albain*, "Prince of Alban," given by the Irish annalists to the *mormaers* of Moray. It is not an unusual thing for princes to be credited with titles which they claim but do not hold.

IV.

The problem might be left at this point with the above solution which, although rather indefinite, is reasonably supported by the evidence immediately available. But there are several other facts which prompt

me to attempt a more exact identification of Malcolm and Karl. The arguments which follow, however, must be regarded as rather more speculative than the preceding.

At the period under review there are five Malcolms mentioned in separate sources (including *Orkn. Saga*), three of them at least being princes of considerable strength and importance. Some or all of these may be identical, and this possible identity has some bearings on the identity of Karl.

The first we find in *Njáls Saga*, chaps. 86–87. He is described there as "King of Scots," and we are told that he fought in alliance with Earls *Hundi* and *Melsnati* against Sigurd the Stout, at some time between 978 and 995. (There was of course no "Malcolm King of Scots" at this time.) In dealing with the reign of Sigurd, *Orkn. Saga* does not mention these three chiefs, but describes a conflict with an Earl *Finnleikr*. As the incidents narrated in *Orkn. Saga* appear to have taken place about the same time as those in *Njáls Saga*, it would not be rash to assume that the four chiefs mentioned were allies in a struggle with Sigurd. *Hundi* and *Melsnati* were defeated by Sigurd (according to *Njáls Saga*), and likewise *Finnleikr* (according to *Orkn. Saga*), but Sigurd found it necessary to retreat before Malcolm, who was gathering a fresh host at Duncansby (*Njáls Saga*, chap. 86). Now there is a significant sentence in the following chapter of *Njáls Saga*. Sigurd is said to have "held the four provinces of Moray, Ross, Sutherland, and *Dalar*." But one may doubt if any Orkney earl ever *held* those provinces. What Sigurd probably did was to lead pillaging expeditions into those four provinces for the reason that he had been fighting against their rulers. One may with a fair measure of reason assign Sigurd's four enemies to the four provinces which he thus harried. *Finnleikr* was without doubt *Finnlaech, mormaer* of Moray (*d.* 1020), the father of Macbeth. *Hundi* (or *Cuilean*) and *Melsnati* (Celt. *Maelsnechte*), according to *Njáls Saga*, chap. 86, were associated in the murder of Havard of Freswick in Caithness, and were therefore probably rulers over Ross and Sutherland, the nearest provinces. The province called *Dalar* is left for the chieftain called "Malcolm King of Scots," and *Dalar*, as W. F. Skene showed fairly conclusively,[1] is almost certainly to be identified with the province of Argyll, which was roughly co-extensive with the old kingdom of *Dalriada*. Indeed, when it is remembered that Dalriada was the land of the "Scots" proper, and that the Norsemen, as *Orkn. Saga* shows, called the sea-lochs in the west of Scotland *Skotlandsfirðir*, or Scotland's Firths, it may well have been that the

[1] *Celtic Scotland*, vol. i. pp. 376, 390, 397.

term *Skotakonungr*, "King of Scots," was one deliberately applied to the ruler of the old province.

The second Malcolm is the one we have already met in chaps. 12, 17, and 20 of *Orkn. Saga*. Between 998 and 1000 Sigurd the Stout repudiated his allegiance to King Olaf Tryggvason of Norway and made an alliance with this "Malcolm King of Scots" by marrying his daughter (*Orkn. Saga*, chap. 12). (This cannot have been Malcolm II., who came to the throne in 1005.) The alliance was later cemented in the Scandinavian manner by Sigurd's giving his son Thorfinn to Malcolm to foster. On Sigurd's death in 1014 this Malcolm gave Thorfinn the earldom of Caithness and Sutherland (*Orkn. Saga*, chap. 13), and in 1021 supported his claims to part of the Orkney earldom against Earl Brusi (*Orkn. Saga*, chap. 17). He died, as chapter 20 has told us, in 1029, and was succeeded by the mysterious Karl, son of Hundi. If this Malcolm is identical with the last, it will have to be assumed that Sigurd decided to make friends with his former arch-enemy—a not unlikely proceeding in view of his breach with King Olaf. If this Malcolm lived in Argyll, it would be a natural place for Sigurd to leave his son behind, as he seems to have done, on his way to Ireland (*Orkn. Saga*, chap. 12). If Karl's father Hundi was the *mormaer* of Ross or of Sutherland as suggested above, it is not unreasonable to suppose that Karl succeeded Malcolm in Argyll—by conquest, perhaps, if not by right.

The third Malcolm is referred to in *Njáls Saga*, chap. 158. After the battle of Clontarf in Ireland in 1014, in which Sigurd the Stout was killed, his Icelandic friend and ally Kari set off North, but spent the winter with an "Earl Malcolm," who lived at *Hvítsborg* in *Skotland*, near to *Beruvík*. The latter name of course reminds us of Karl's headquarters. *Hvítsborg*, "the fortress of *Hvítr*," has been identified—rather improbably—with Whithorn; one expects, however, a name beginning with the Celtic component *Dun-*. I have diligently sought traces of both names on the west coast of Scotland, but with negligible success. Only one name seemed to have a connection—and a very doubtful one—with *Beruvík*. This is the *Barbreck* river flowing into Loch Craignish. This name is fairly certainly derived from Old Norse *Berubrekkr*, "the slope of *Bera*," *Bera* being the original Old Norse river-name and identical with the first element in *Beruvík*, and the stream having apparently taken the name of the hill-slopes on the south side of it. But if identification of place-names is difficult, there are other points of contact with *Orkn. Saga*. Sigurd the Stout, as has been said, left his son Thorfinn with "Malcolm King of Scots" so called on his

way south to Ireland accompanied by Kari the Icelander. When Sigurd was killed, what would be more natural than that Kari should return as soon as possible to the same Malcolm with the news. The identity of Sigurd's "King Malcolm" and Kari's "Earl Malcolm" seems to me on these grounds to be not only possible but probable.

The fourth Malcolm is Malcolm Maelbrigte's son, nephew of Finnlaech, *mormaer* of Moray. According to the Irish annalist Tigernach (Anderson's *Early Sources*, vol. i. p. 551), Malcolm Maelbrigte's son, "Ri Albain," slew Finnlaech in 1020 and became himself *mormaer* of Moray, over which he appears to have ruled until his death, which occurred (*Early Sources*, vol. i. p. 571) in 1029. This date suggests that he is one and the same as the *Orkneyinga Saga* Malcolm who died in 1029 and was succeeded by Karl; and his ambitious and successful conquest of a neighbouring province connects him with the first Malcolm of *Njáls Saga*. If he is to be identified with the hypothetical Malcolm of Argyll, then on his death in 1029 we might assume that his realm was partitioned between Karl and Macbeth, the latter regaining his father Finnlaech's province of Moray and Karl obtaining Argyll. But in spite of the usefulness of the date 1029 and these other points of contact, the identity of this Malcolm with any or all of the preceding must be accepted with caution.

The fifth Malcolm is *Malcolum mac Moilbrigte*, referred to in *The Book of Deer* (ed. J. Stuart, p. 92) as granting the lands of *Delerc* (not so far identified) to the Abbey. This Malcolm may be identical with the last; but there is no evidence as to when he flourished, and both Christian name and patronymic were not uncommon.

The result of these speculations is to make *Karl Hundason* a *mormaer* of Ross or of Sutherland (or of both), who annexed Argyll in 1029 on the death of its ruler Malcolm and, thus strengthened, sought soon after to extend his domains to the North by setting a puppet-earl over the province of Caithness. With this notion of Karl, chapter 20 of *Orkneyinga Saga* can be read quite intelligibly. The whole episode emphasises the strength and independence of the rulers of these Northern provinces, and the severity of the intermittent struggle between Norseman and Gael which continued until the thirteenth century.

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III.

TWO SETS OF MINIATURE BAGPIPES IN THE NATIONAL MUSEUM OF ANTIQUITIES OF SCOTLAND. By GILBERT ASKEW, F.S.A.Scot.

The collection of musical instruments in the National Museum of Antiquities has during the last few years been enriched by the acquisition of two highly interesting sets of bagpipes, one being of a type by no means common and the other distinctly rare. These instruments being worthy of more than the brief accounts of their accession,[1] the writer has prepared the following notes on them, which he hopes may be of interest to such Fellows of the Society, or others, who are amateurs of the bagpipe.

The first set to be dealt with is of the miniature Lowland type, that is, an instrument of the Lowland pattern, bellows blown, but on a small scale and intended either for practice purposes or for playing within doors (fig. 1). It is made of rosewood (or some closely similar material), and has the usual three drones of different lengths all mounted in a common stock: the drone harmony is as usual, *i.e.* the small drone sounding the tonic, the next in length the dominant, and the longest the octave below the tonic. The drones have brass ferrules and ivory tops, and the middle one has an ivory stopper attached by a cord. The lengths of the three drones are as follows, the measurements being taken from the point of junction with the stock and with the slides completely closed:—

Small drone, $5\frac{7}{16}$ inches. Middle drone, $9\frac{3}{8}$ inches.
Large drone, $15\frac{11}{16}$ inches.

[1] *Proc. Soc. Ant. Scot.*, vol. lxviii. 1933–4, pp. 14 and 415.

The drone stock is of the same wood as the drones, with an ivory mount, and is stamped NAUGHTAN / ABD. The chanter stock is of cocus or

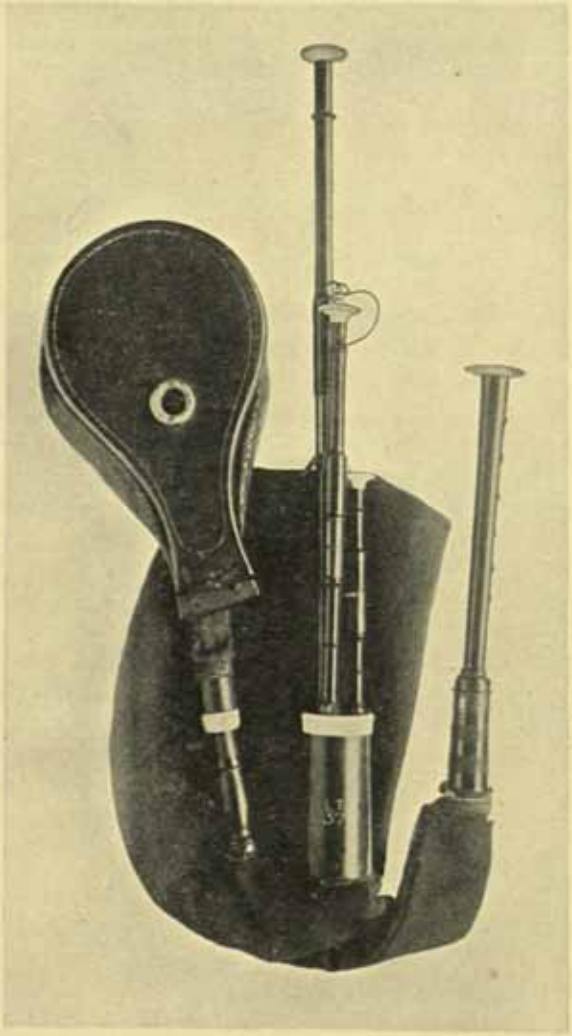

Fig. 1. Lowland Miniature Bagpipes.

rosewood, and has a brass mount; the chanter is of ebony with a horn mount and an ivory sole. Neither chanter nor stock is original, being probably later additions to enable the set to be used for the practice of

Highland pipe music: this would also explain the presence of the stopper attached to the middle drone. The chanter is $7\frac{11}{16}$ inches long, and resembles the ordinary Highland practice chanter in the arrangement of the holes, although these are distributed over a slightly shorter distance than in the standard pattern.

The connecting-piece which passes the air from the bellows to the bag appears to be of cocus wood, and is without the non-return valve which is usually found in Northumbrian examples. The bellows have mahogany sides, one of which is pierced for an ivory valve; the sides are of pear-shape form and measure $8\frac{3}{4}$ inches by $5\frac{1}{2}$ inches; the leather is kept in place by stitching. The bellows bear no maker's name but are probably contemporary with the drones.

The interest in this set lies in the fact that it is from the hand of John Naughtan of Aberdeen, who flourished between 1824 and 1842. On a previous occasion the writer had to deal with a set of bagpipes by this same maker,[1] and the late Mr R. Murdoch Lawrance, a former Fellow of this Society, was kind enough to furnish some dates for Naughtan and his work. Apparently Naughtan is recorded in the first Aberdeen Directory, 1824–5, as a turner; in the volumes for 1825–6 to 1829–30 he is described as being a turner and pipe-maker; and from 1831–2 to 1841–2, his final appearance in the Directory, he is mentioned as a turner and musical instrument maker. His workshop was located at 28 St Andrew's Street, Aberdeen, from 1824–5 to 1829–30, at 90 George Street, Aberdeen, from 1831–2 to 1839–40, and at 122 George Street from 1840–1 to 1841–2.

The drones and drone stock of this set are excellent examples of the turner's art, and it is to be regretted that the original chanter has not been retained. Chanters, especially old chanters, are extremely fragile, and it is rare to find an old set of pipes which has not been renovated in this respect.

The second set of bagpipes to be described is of the mouth-blown Highland miniature type (fig. 2). In this example the chanter is of *lignum vitæ*, with an ivory sole, and is very much worn at the holes, which are distributed over a length of $4\frac{15}{16}$ inches; the chanter itself is $6\frac{13}{16}$ inches long. On being tested with a Northumbrian small-pipe reed, the scale was found closely to resemble that of the present-day Highland bagpipe, the lower leading note being much flattened. The chanter stock is of ebony with an ivory mount, but is not original. The blow-stick is of the same wood, ivory mounted, with a modern horn mouthpiece, well

[1] *Transactions of the Hawick Archæological Society*, 1934: "The Lowland Bagpipes: Notes on the Instruments in Wilton Lodge Museum, Hawick."

used; it is $10\frac{3}{16}$ inches long over all. The blow-stick stock is of ebony and ivory, but this again is not original.

Fig. 2. Highland Miniature Bagpipes.

The three drones, which are all carried in the same stock, are plainly but neatly turned, and have mounts and ferrules of old ivory. The lengths are as follows:—

Small drone, $5\frac{13}{16}$ inches. Middle drone, $7\frac{7}{16}$ inches.
Large drone, $11\frac{1}{2}$ inches.

This type of bagpipe appears to be rare, and only five examples are known to the writer, though there are probably others in private collections. None of the standard works on the bagpipe makes any mention of the pattern, and it was not until 1931 that the present writer suggested, in a paper on the origins of the Northumbrian bagpipes,[1] that these mouth-blown Scottish small pipes were a distinct species and had no direct connection with the Northumbrian series. It is probable that they have never been dealt with by earlier authors simply because, being so uncommon, anyone who had only seen one such set would perhaps be justified in treating it as a freak and leaving it alone.

Of the four other examples known to the writer, the finest is one which was formerly (and may still be) the property of a well-known Tyneside piper. It bears the following inscription:—

"1st Highland Batt'n., Jan. 4 1757.
Hon. Coll. Montgomery."

This inscription probably refers to Major the Hon. Archibald Montgomerie, afterwards the Earl of Eglinton, who in 1757 raised the 77th Regiment (Montgomery's Highlanders), his commission as colonel being dated 4th January 1757; the regiment was disbanded in 1763.

A similar set, slightly larger and more modern, is in the collection of Mr William Cocks, F.S.A.Scot., of Ryton-on-Tyne; another is in the Royal Scottish Museum, having been presented by Dr A. B. Flett, of Edinburgh, in 1913. The latter set is of ebony with ivory mounts, and is ascribed, probably correctly, to the early nineteenth century. As to the fifth set, this is in private hands at Tain, and was recently reported to the writer. He has not seen it, but the details and measurements given place it in the same class as the other four sets dealt with above; it is of boxwood mounted with ivory, with an ebony chanter (which suggests a replacement of this part), and bears the name of MacGregor, Glasgow, as maker.

It has been suggested to the writer that these little bagpipes came into use in the Highlands after the rising of 1745, when the playing of the bagpipe was forbidden under heavy penalties; by using these comparatively quiet instruments players would be able to practice without informing the whole neighbourhood as to their illegal activities. Whatever truth there may be in this suggestion, there can be no doubt why the type never became popular. The small reeds necessary for chanter and drones would be very quickly spoilt by the moisture inevitably collecting in the bag, and replacements would have to be frequent.

[1] *Archæologia Æliana*, 4th series, vol. ix. p. 81.

In conclusion, the writer would return thanks to Dr J. Graham Callander and Mr A. J. H. Edwards for their kindness in giving him access to the instruments and allowing him to take measurements and carry out tests with reeds, and also for the photographs of the two sets.

IV.

ON THE RELATION BETWEEN A RAISED BEACH AND AN IRON AGE MIDDEN ON THE ISLAND OF LEWIS, OUTER HEBRIDES. By DONALD BADEN-POWELL and CHARLES ELTON.

1. Introduction.

The problem of the geological date of the separation of certain parts of the British Isles from each other has occupied our attention for some time, and we decided that the Outer Hebrides possessed certain features which made this an important area in which to start investigations. Accordingly, in 1933 and 1935 we undertook field work in capacities as geologist and animal ecologist, with the general object of discovering as much as possible about the physiographical and biological history of the islands, especially of Lewis.

Three papers have already been published (Elton, 1934 and 1936, and Hora, 1934) dealing with the parasites of certain Hebridean mammals, which are believed to be important as indicators of the Pleistocene history of these islands, and another on freshwater animals (Elton, 1936). In that part of the general work which deals with the more recent history of Lewis, it became important to find out the connection between the periods of human occupation and the natural events, such as the formation of peat, river deposits, raised beaches, and ancient sand dunes, and during this part of the field work a raised beach was discovered and its relation to a kitchen-midden was proved. The archæological objects from the midden have been deposited in the National Museum of Antiquities of Scotland at Edinburgh, the animal bones in the Royal Scottish Museum, and the shells from the midden in the University Museum at Oxford. The descriptions of the animal bones in the present paper are quoted from manuscript reports by Miss D. M. A. Bate and Miss M. Platt, and copies of these reports are kept at the Bureau of Animal Population at Oxford.

We are greatly indebted to the Ancient Monuments Board for Scotland and to the officials of the Galson Estate for allowing us to carry out excavations. We also wish to thank Dr Graham Callander for working out the pottery and implements; Mr A. J. H. Edwards for supplying us with a list of bones found by him, and identified by Professor James Ritchie; Miss D. M. A. Bate and Miss M. Platt for their careful investigation of the fragmentary animal bones found by us; and Dr R. M. Craig for advice about conditions in Lewis.

2. The Galson Section.

The site showing the connection between the raised beach and the kitchen-midden is on the west coast of Lewis opposite Galson Farm House, about 7 miles south-west of the Butt of Lewis. This is the site from which occupation layers, including an earth-house, were described by A. J. H. Edwards (1924), and its position has also been recorded by Dr Callander in the *Report of the Royal Commission on Ancient and Historic Monuments of Scotland* (1928, p. 9). The midden layer is exposed at intervals near the top of a high talus slope of sand, which occupies the coast between Teampull nan Cro Naomh and the mouth of the South Galson Burn, a distance of about 200 yards; the vertical height from the modern beach to the top of the slope is about 35 feet. On the western part of this slope—that is, towards the track from Galson Farm to the sea—fine raised-beach shingle crops out about 25 feet above present high-water mark. It should be mentioned here that all heights were measured from high-water mark, which was taken as the highest point at which seaweeds were growing on the rocks; measurement was made by means of a small hand-level. The general state of the site before excavation consisted of this talus slope of sand, with an intermittent outcrop of the midden near the top of the slope, an outcrop of raised-beach shingle rather over half-way up the slope towards the west end.

Four small excavations were made by us with the two special objects of—

(*a*) Discovering the stratigraphical relation of the midden to the raised-beach shingle.

(*b*) Collecting as many animal bones and archæological objects as possible from the midden layers in the short time at our disposal.

Excavation A.—In the midden layer only, towards the eastern end of the exposure. Depth, 4 feet 2 inches.

Excavation B.—A trial hole was put down in the talus slightly farther east than Excavation A, starting from the level of the base of that section. This was sunk to a depth of 7 feet without striking the raised-beach shingle. It is possible that the shingle is missing, both here and vertically under Excavation A.

Excavation C.—A vertical section was cut through the midden at a point much nearer the western end of the exposure, and was continued down through underlying dune sand until the shingle was found, and a

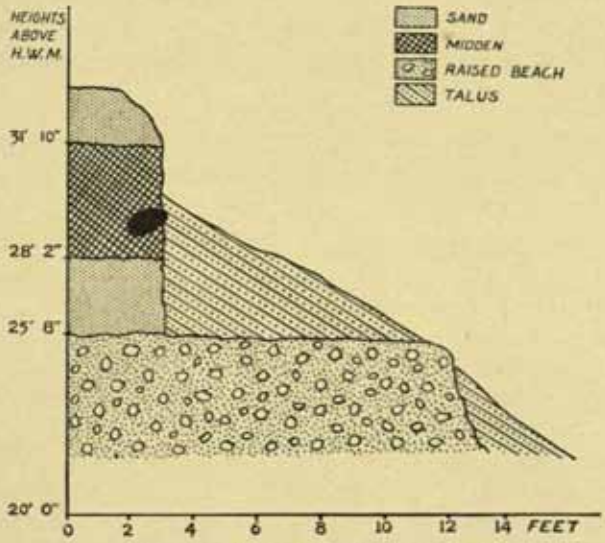

Fig. 1. Section at Galson raised beach.

volume of midden layer, 3 feet 8 inches thick, was removed over a horizontal area measuring 4 feet 6 inches by 3 feet.

Excavation D.—A trench was also cut a few yards east of Excavation C through the talus and sand at right angles to the direction of the exposure, and was taken down to the surface of the raised-beach shingle at its base.

A general section through Excavations C and D is shown in fig. 1.

The raised beach at the base consists of fine, well-rounded beach shingle, with practically no interstitial sand, and there is no doubt that this deposit is continued under undisturbed dune sand as well as under the talus. Unfortunately, no fauna was found in the raised beach; but this is not surprising, considering how rare shells are on a pure shingle beach at the present day. No artefacts or pottery were found.

The dune sand consists largely of comminuted shell fragments, and no stones or whole shells or any archæological objects were seen in this deposit. In this it differs from the sand making up the talus, which contains large angular stones, animal bones, shells, fragments of pottery, and in one case a small worked piece of flint. All of these objects have slipped down from the midden above.

The midden layers consist of hearth sites in the sand, mixed with refuse, and will be described in greater detail below. It seems that the human occupation of the site began in the middle of the period of dune formation, and both at Excavations A and C it was proved that there were at least 2 or 3 feet more dune sand which accumulated after the site had been evacuated.

3. The Galson Middens.

The two sections, A and C, which were cut through kitchen-midden material are not connected by a continuous outcrop, but are separated by a wide gap covered by sandy talus. This gap was already in existence at the time of Mr Edwards's excavation, and he suggests (1924, p. 186) that either the removal of the sand was "for some utilitarian purpose or the effect of a severe storm." As the archæological objects found by us were not quite identical in sections A and C, they will be described separately, but in Dr Callander's opinion there is no great difference in age, either between the two sections or between the top and bottom of each section.

Excavation A.

The layers exposed in Excavation A (in 1933) were as follows:—

	Thickness of Layers.	
	Feet.	Inches.
Blown sand, with impersistent line of sea-shells .	3	0
Layer of large stones	..	..
Hearth layer, brown earthy sand towards the top, black towards the bottom	0	8
Blown sand	0	6
Thin black layer	..	..
Blown sand, base not seen	..	..

Metal Objects.—Three small rusted pieces of iron were found in the top part of the hearth below the layer of large stones. One of these is described by Dr Callander as a small iron knife. No iron objects were seen in the black part of the hearth nor in the lower part of the section. One bronze pin, 3 inches long, was found above the hearth layer (fig. 2).

Fig. 2. Bronze Pin from Galson, Lewis. (¼.)

Bone Implements.—One borer made from a splinter of bone, length just under 2 inches, and one well-polished bone pin, just under 5 inches long, were both found in the hearth layer. In the same layer there was also found an object described by Dr Callander as a "bone whorl, of domical shape, made from the epiphysis of an animal's leg bone, $1\frac{3}{4}$ inch in diameter and $\frac{15}{16}$ inch in height." Miss Bate has also examined this object and considers it to be a human bone: "There is one human bone in the collection from the hearth; this is the head of a femur which had not yet become completely fused to the shaft of the bone. The depression for the insertion of the *ligamentum teres* has been artificially enlarged to form a hole through the bone." No other human bones were found either in Excavation A or C.

Stone Objects.—One flat stone whorl was found in the thin black layer 6 inches below the hearth. A few flakes of flint occurred in the brown part of the hearth, but cannot be recognised as implements. These must have been brought by human agency from some distance, as no flint was seen by us to occur naturally in Lewis, even in the glacial drift. The pieces of flint in this hearth are not derived from the flinty crush rock of Eastern Lewis, with which they have been compared carefully by us.

Pottery.—Small pieces of dark grey pottery were found in the hearth layer. None of these was decorated, but two of them were rim fragments. There were not enough pieces to fit together so as to get any idea of the original size or shape of the utensils. Some of the pieces of decorated pottery which were collected later from the talus (fig. 4) were not far away from Excavation A.

Excavation C.

The position of this excavation is towards the west end of the outcrop of the midden, near where the track from Galson Farm reaches the shore. It is situated above the outcrop of the raised

beach, and the main object of undertaking a fresh excavation here (in 1935) was to find out the relation between the midden and the raised beach; also better pottery was found here than in Excavation A. Excavation C showed that the midden layers are 3 feet 8 inches thick at this point, and that there are conspicuously large stones between the depths of 1 and 2 feet down from the top of the midden. The lower part of the midden contains oblique layers of burnt red earth and pellets of greenish clay, and at the base there is a prepared platform of the same clay, which occurred also in between the large stones.

Fig. 3. Pottery from Galson.

Metal Objects.—No pieces of iron were found in this excavation, and the only finished metal object found was a bronze rivet, from the very top of the midden. Dr Callander reports that many similar rivets have been found from the Glenluce Sands, Wigtownshire, and that such rivets are known to have been used for fixing patches on an Iron Age bronze cauldron.

Pottery.—Fragments were found at all levels throughout the midden layer, and the depths at which they were obtained are measured from the top of the layer. The pieces of greatest chronological value were:

At 1 foot 2 inches, a rim and wall fragment of dark brown ware, rim flat on top and projecting outwards very slightly, showing two rows of deep, almost vertical incised lines under the brim (fig. 3).

At 1 foot 4 inches, rim fragment of dark ware, the rim hollow on the top, and projecting outwards and inwards, with finger-made depressions under the rim (not figured).

At 2 feet 3 inches, one piece with applied (wavy) decoration (fig. 4, bottom left).

At 2 feet 6 inches, rim and wall fragment of thin red ware, rim everted, and decorated with short vertical incised lines under rim. At the same level there was a small fragment (of a different pot) with incised lines (curved) (fig. 4, centre and top right).

Several decorated fragments were found on the talus between Excavations A and C. One rim fragment, everted at the lip, and two wall fragments, all of thin red ware, the first wall fragment bearing

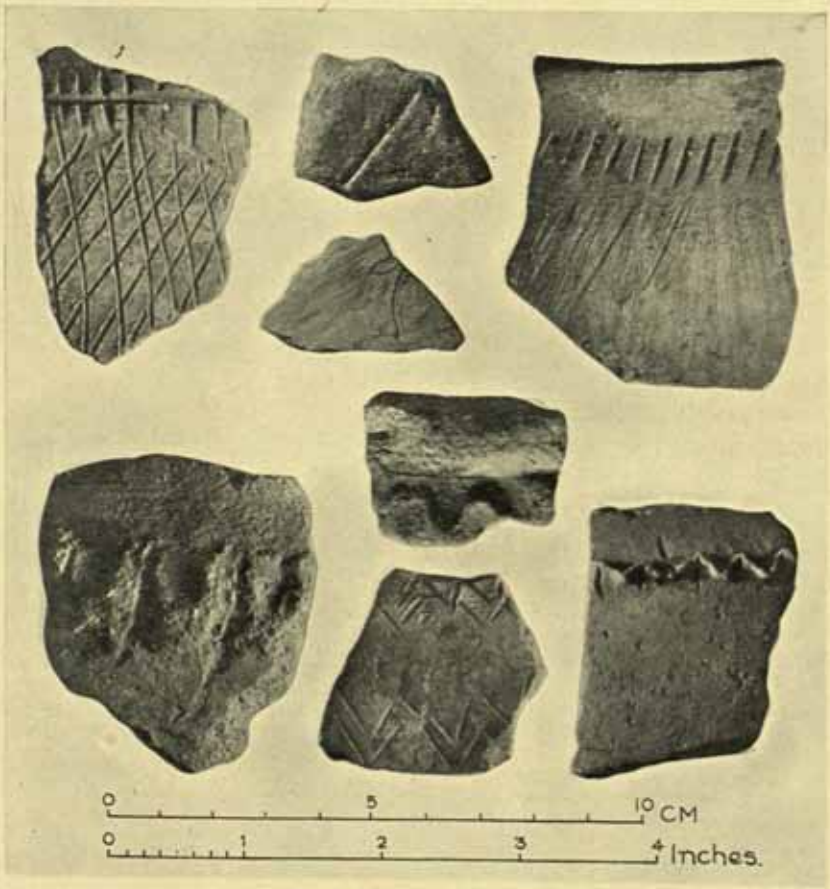

Fig. 4. Pottery from Galson.

double zigzags and the second a lattice design, all incised. Also three decorated fragments with applied wavy line (fig. 4).

It was noticed in the field that the thinner red ware tended to be found in the lower part of the midden layer and the coarser grey ware towards the upper part, but the excavation was not on a large enough scale to show whether this observation has any great significance. In any case, the pottery as a whole is considered by Dr Callander to belong to one period—the early part of the Christian Era. Similar ware has

been found in many of the kitchen-middens and earth-houses in the Outer Hebrides, and although hand-made pottery continued to be produced until well into the nineteenth century, Dr Callander considers these pieces from Galson to be comparatively early.

The large stones consist of angular pieces of the local Lewisian gneiss, some of which had been artificially broken. The dimensions of the largest measured were 2 feet 3 inches by 1 foot 7 inches by 6 inches. In both Excavations A and C well-rounded beach pebbles were found, which measured up to about 5 inches long. These are bigger than the pebbles seen in the raised beach in the immediate locality, which are only 1 inch in grade, although pebbles up to 4 inches grade occur in the raised beach at a point about one-third of a mile farther west along the coast. If, therefore, these pebbles are from the raised beach, they may have been brought a short distance, but it is more likely that they were collected from the contemporaneous shore by the men who inhabited the Galson site. The petrology of these beach pebbles in the middens has not been worked out in detail, but they consist mostly of acid gneiss, hornblende gneiss, and pink granite gneiss, all rocks which occur in the neighbourhood. Pebbles of Torridonian sandstone were also found, but these need not have been brought any distance, as they occur both in the raised beach and in less rounded form in the boulder clay farther north along the coast. Dr Callander found no sign that the pebbles submitted to him had been used as hammer-stones, but as the natural matrix of the midden deposit is dune sand, they were presumably brought to the site by the hand of man. The green clay found associated with the hearths is like a greenish boulder clay found to the south of Galson, and the pottery may have been made from this boulder clay. Angular fragments of vein quartz were found in the hearths, which almost certainly came from this boulder clay, but it is not possible to say whether these show any artificial flaking.

Two pieces of slaggy material were found in Excavation C, at different levels, and we are indebted to Mr F. Parker for making a chemical examination of these specimens.

The first was found at a depth of 6 inches in the midden layer, and it appears to be a piece of iron ore, but as it is slightly vesicular it has been subjected to heat. It was found by qualitative analysis to contain the following:—

Iron, 64·5808 per cent.
Silicon, abundant.
Magnesium, calcium, and aluminium, a trace.

Under the microscope this material is opaque, except in very thin fragments, which are reddish brown, and isotropic, as they show no interference figure. This substance does not give the normal streak for limonite.

The second of these two objects was found at a depth of 3 feet 6 inches in the midden layer—that is to say, near its base. It is much more vesicular and slaggy in appearance than the first piece, and, in fact, appears to be a true iron slag. Chemical examination proved that it contains:

Iron, 31·441 per cent.
Silicon, abundant.
Magnesium and phosphorus, fairly common.
Calcium, a trace.
Carbonate, a trace.

Under the microscope, a white mineral which is present was proved by its optical properties to be quartz, but the darker part of the specimen was not mineralogically determinable. This specimen gave no streak. The quartz was included in the above analysis, mixed with the darker fraction.

It is quite certain that neither of these two specimens are natural volcanic rocks, as their iron content is much too high. Considering the rarity of iron ore in Lewis (see Jehu and Craig, 1934, p. 847), it is unlikely that these stones were introduced accidentally. It seems, therefore, that their presence in the Galson midden, as ferruginous material which has been subjected to great heat, suggests that iron-smelting was practised not far away.

4. Animal Remains.

One of our objects in excavating at Galson was to obtain dated information about the past faunal conditions on Lewis. Except for deer and a wild cat, most of the remains of mammals belong to domesticated species.

The list which follows includes the animal remains found both by Mr Edwards during his excavations of the earth-house, and by ourselves.

[Table.

	Excavations.				
	A.		C.		Earth-house.
	Hearth.	Below Hearth.	Upper part.	Lower part.	
Mammals:					
Felis sylvestris Schreber (Wild Cat)	–	–	–	×	–
Oryctolagus cuniculus (L.) (Rabbit)	–	×	×	–	–
Cervus elaphus L. (Red Deer)	×	×	×	–	×
Bos longifrons Owen (Celtic Shorthorn)	×	×	×	–	×
Ovis sp. (Sheep)	×	×	×	×	×
Sus sp. (Pig)	?	×	×	×	×
Whale	–	–	×	×	×
Birds:					
Larus marinus L. (Great Black-backed Gull)	×	–	×	–	–
Larus argentatus Pontopp. (Herring Gull)	×	–	×	–	×
Numenius phæopus L. (Whimbrel)	×	–	–	–	–
Fratercula arctica grabæ (Brehm) (Puffin)	×	–	×	–	–
Sula bassana (L.) (Gannet)	×		×	×	–
Phalacrocorax carbo carbo (L.) (Cormorant)	×		–	–	–
Calidris alpina schinzii (Brehm) (Dunlin)	×		–	–	–
Turdus merula merula L. (Blackbird)	×		–	–	–
?*Pyrrhocorax pyrrhocorax* (L.) (Chough)	×		–	–	–
? Some kind of Eagle	–	–	×	–	–
"Duck"	–	–	–	–	×

	Excavations.				
	A.		C.		Earth-house.
	Hearth.	Below Hearth.	Upper part.	Lower part.	
Fish:					
Gadus callarias L. (Cod)	×	×	×	×	×
Gadus pollachius L. (Lythe or Pollack)	×	–	–	–	–
Gadus virens L. (Saithe)	–	×	–	–	–
Molva molva (L.) (Ling)	–	×	–	–	–
Crustacea:					
? *Cancer pagurus* (Auct.)	–	–	×	–	×
Mollusca:					
Mytilus edulis L.	×	–	×	×	×
Pecten maximus L.	×	–	–	–	×
Patella vulgata L.	×	–	×	×	×
Gibbula cf. *cineraria* (L.)	–	–	×	–	–
Littorina littorea (L.)	×	–	×	×	–
Littorina littoralis (L.)	–	–	×	–	–

Mammals.

Miss Platt has identified one complete small rib from Excavation C as belonging to the Wild Cat, an animal which is no longer found living on Lewis.

Red Deer were represented by an upper cheek tooth row, ribs, a small hyoid bone, fragments of pelvis, tibia, radius, ulna, humerus, and tarsals. The three associated upper molars have a total antero-posterior length of 59 mm. These remains of Deer, which were more common in Excavation A than in C, belong to a small race. This was considered by Miss Bate, who only saw the specimens from Excavation A, to resemble a kind now found in Norway; but Miss Platt identified them with the true Scottish Red Deer.

The remains of Rabbit are probably intrusive, as none of the bones

belonging to this animal were calcined, whereas those of some of the other animals did show signs of having been in the fire. The only other bones of a wild mammal which were found, if we omit the possibility of pigs having been wild, belong to some species of whale, but were not further identifiable.

The domestic animals from Galson are cattle, sheep, and pigs. Of these the cattle are the most interesting, and belong to the small Celtic Shorthorn type. They are represented by ribs, scapula, carpals, a fore phalange, and many teeth. No entire skull was found, but parts of the skull of a young animal were represented in Excavation A by the frontal, nasal bones, and an ear bulla, also by a complete lower jaw with all the milk molars present and the first permanent molar just showing. Altogether three horn cores were found, one of which has a length of 15 cm., taken along the curve, and a circumference at its base of about 15·5 cm. Harvey-Brown and Buckley (1888, p. 43) record that remains of *Bos longifrons* have been found in a Picts' house in Harris.

The remains of sheep represent both adult and very young animals, and consist of scapula, rib, cannon bones, small vertebræ, humerus, tibia, and a lower jaw which has both the permanent molars and the third milk tooth present. As no horn cores of sheep were found, the exact breed of these animals is not known.

Except for fragments of ribs and limb bones, the remains of pigs consist of fragments of skulls, while deciduous molars were found at more than one level. These remains were more numerous in Excavation C than in A, and one canine tooth from below the hearth in Excavation A belonged to a very young pig, and many of the other remains of this species belonged either to young or small individuals.

No remains of horses were found.

Birds.

Sea-birds are by far the most common among those represented, although remains of the chough and the blackbird were also found. Bones of birds occurred more frequently in the upper than in the lower part of each excavation.

The sea-birds were identified as follows:—

Great Black-backed Gull, various limb bones and a quadrate bone.

Herring Gull, limb bones.

Whimbrel, one leg bone from Excavation A. Miss Bate observes that this species is said to breed at the present time on the island of North Rona (which is rather over 50 miles north-east of Galson).

Puffin, a few bones, including tarso-metatarsus.

Gannet, only found in Excavation C, a tibia and a wing bone.

Bones of Cormorant and Dunlin were only found in Excavation A.

Among non-marine birds, Miss Platt recorded from Excavation A "a wing bone, which has not been fully identified, resembling in size that of a Chough (*Pyrrhocorax pyrrhocorax* (L.))." From Excavation C, "the vertebra of a bird, some kind of eagle (*Falconidæ*)." One of the most interesting finds was the remains of the Blackbird (Excavation A), which is essentially a woodland and garden species, and this record may help to throw some light on the biological history of Lewis, which is so conspicuously devoid of natural woodland at the present day.

Fish and Crustacea.

Fish remains were extremely numerous, the most common being cod. Both vertebræ and fragments of the head were found, and in addition to cod there were also pollack, saithe, and ling. In the material from Excavation C Miss Platt recorded "part of the large pincer of a crab, possibly the edible variety (*Cancer pagurus*)."

Marine Shells.

By far the most common shells in the occupation layers were limpets (*Patella vulgata*) and winkles (*Littorina littorea*), but other shellfish which might have been used for food or as bait, such as mussels (*Mytilus edulis*), were also found. These three species occurred at both the excavations; but in Excavation A winkles were definitely more common than limpets, and another species found at this part of the site were fragments of a large edible scollop (*Pecten maximus*). At Excavation C, however, limpets were more abundant than winkles throughout the layers of occupation, and it was especially noticed that they were collected in heaps at the foot of the large stones. Two other species, *Gibbula cineraria* and *Littorina littoralis*, were also found in Excavation C.

We can see from the contents of the Galson middens that fishing was practised, cod being a favourite article of food. Cattle, sheep, and possibly pigs were tended, but there is no evidence that horses were kept; wild deer were hunted. The diet of these people was also varied by crab, limpets, and winkles, and it is interesting that the winkles of this coast are still highly esteemed by the crofters of the neighbourhood, and we were told that these shellfish are at present exported from here to London. It is also interesting to compare the inferred habits of these

Iron Age people, who occupied the Galson site, with the tastes of the recent St Kildans. According to Heathcote (1900, pp. 154–7), the most valuable sea-birds to the St Kildans at the time of his visit were fulmars, and second in importance to these, gannets. No remains of fulmars were discovered in the Galson excavations.

The animal remains found by Mr Edwards during his excavation of the earth-house at Galson were identified by Dr Ritchie, but have not previously been published in detail. They are almost the same as those found by us in the midden layers; the most common domestic animal being the Celtic Shorthorn, the next in order of frequency being sheep, and thirdly the pig. Of wild animals which probably had been used also as food, a Red Deer was represented by a small fragment of an antler. The only other mammal found was some kind of whale, represented by a few bone fragments and an intervertebral disc. Birds were represented by a fragmentary wing bone, apparently of the Herring Gull, and apparently by ducks. Cod was the only fish identified; the only invertebrates found were: one mussel, two limpets, one scollop (*Pecten maximus*), and part of the claw of an edible crab. Edwards (1924, p. 196) states that the pottery from the earth-house is the same as that from the midden. The two probably do not differ greatly in age.

5. The Galson Raised Beach.

Before describing the extent of the raised beach at Galson, we must point out that very little work has been done on the distribution of raised beaches on the Outer Hebrides, because the geologists who have visited these islands have usually made the study of the pre-Cambrian rocks their main objective. Even James Geikie was mainly concerned with the glaciation, although he hinted at the presence of a late "post-glacial" raised beach (1894, p. 160).

Jeffreys gives "Stornoway Raised Beach" as a locality for *Trochus cinerarius* and *Fusus antiquus* (vol. iv. p. 325, and vol. v. p. 203), but it is possible that the reference is to the interglacial marine beds of Northern Lewis, because a species allied to *Fusus* is common in these deposits. These marine beds are much older than the Galson raised beach, and do not come within the scope of the present paper. Jehu and Craig (1934, p. 842), after remarking on the general scarcity of raised beaches along the coasts of Lewis, drew attention to the fact that the peninsula to the east of Stornoway which unites the Eye Peninsula with the mainland of Lewis consists "partly of blown sand and partly of beach gravel." During our field work we were able to confirm the suggestion that marine

material forms a substratum of this neck of land, but it is not certain whether this can be described as a true raised beach. Gregory reported a raised beach at Lochmaddy at a height of about 10 or 12 feet above O.D. (1928, p. 119), but he mentions that this is the only example seen by him in the Outer Hebrides. In a paper on the surface features of Lewis, Panzer (1928, p. 195) hints that low-level raised beaches may exist at Tarbert (Harris), but he gives no details.

Galson.—The coast at Galson is completely exposed to the open Atlantic, and storms here are extremely severe, especially in winter. One is therefore forced to make sure that the apparent raised beach along this coast is not built of shingle thrown up by storms at the present time. But at Galson at least this is disproved by several considerations. Firstly, the pebbles in the raised beach are of fine grade, at Galson itself a size of over 1 inch being exceptional, whereas the beach now forming at the same place consists of very coarse material, the average pebbles being 6 inches long. Secondly, this difference of grade cannot be due to any sorting action by the existing waves, because the raised beach outcrop occurs on the small capes along the coast, and the tendency of storm action at present is to drive the shingle up into the bays. Thirdly, we have to explain the undoubted fact that the blown sand at the midden site at Galson was formed later than the raised beach, and was laid down on top of it.

As regards its lateral distribution, the raised beach was traced in an easterly direction from the site of the midden as far as the mouth of the North Galson Burn—that is, for a distance of about half a mile. (The names used here will be found on the 1-inch Ordnance Map, Popular Edition, Sheet 8.) The coast immediately north-east of the North Galson Burn has not yet been examined, but as the whole coast from this point to the cape at Cobha Sgeir opposite the Dell Rock consists of high ground, it is unlikely that extensive outcrops of the raised beach will be met with in this direction. Beyond Cobha Sgeir the whole coast was examined from the mouth of the Dell River as far as Bad an Fithich, but no sign of a low-level raised beach was seen. To the south-west of the site of the midden the raised beach was traced for about half a mile along the coast, as far as the place, easily visible on the 1-inch Ordnance Map, where the 50-foot contour first bends out towards the coast. So far no attempt has been made to trace the raised beach farther in this direction.

No marine shells were found in the raised beach at Galson, except for a few *Patella vulgata*, of which the provenance is doubtful. Where the base of the beach is not hidden by the storm beach now in process of

formation, it rests on an eroded platform of Archæan rocks; but at the farthest point to which it was traced towards the south-west it appears to rest on boulder clay, though the section is obscure and would be very difficult to clear. There are two types of boulder clay in Northern Lewis, one of which is brown in colour, and contains erratics of Torridonian arkose and sandstone, while in the other, greenish boulder clay, these erratics are extremely rare, or altogether absent. The boulder clay on which the raised beach appears to rest to the south-west of the Galson site is that which does not contain erratics from the Torridonian. These erratics, however, do occur in the raised beach, and have therefore been derived from the north-east, beyond the North Galson Burn. We should mention that the remarks about the small size of the shingle in the raised beach at Galson only apply to the immediate neighbourhood of the midden site, and that to the south-west there is a development of alternate layers of coarse and fine shingle.

As no fauna has been found in the raised beach near Galson, it would be rash at present to attempt correlation with raised beaches elsewhere, especially outside Lewis. It is also difficult to estimate the amount of submergence represented by this raised beach, because it consists of a shingle bank facies along its entire length, as far as it was seen by us. The height of the base of the beach was only 5 feet above high-water mark towards the mouth of the North Galson Burn. As already noted, at the midden site itself the base of the beach was not seen, but the top of the shingle was at about 25 feet above the same datum. The height at the point to the south-west where it rested on boulder clay was 16 feet above present high-water mark. The coast from this point to the mouth of the North Galson Burn is backed by an unusually flat strip of land, behind which the ground rises abruptly from an altitude of 30 feet O.D., and, considering these facts, we can say that the submergence represented by the raised beach is somewhere between 10 feet and 30 feet. As regards the age of this beach, it seems impossible that it is in any sense "Pre-Glacial," because even if we ignore the obscure section in which it appears to rest on boulder clay, we still have to account for the Torridonian erratics, which were almost certainly derived from the "Torridonian Boulder Clay" to the north-east.

Stornoway.—During our field work of 1933 we found that Loch Branahuie, 3 miles east of Stornoway, is held up by two ancient marine beaches, respectively north and south of the loch. These beaches can only doubtfully be called true raised beaches, as the only sections we saw in them were poor. But it would seem that the sand-dunes which cover most of the surface of the ground here have been formed on top

of the marine feature, though the evidence is not as clear as at Galson. At their base they were seen to rest on the Stornoway Conglomerate (probably of Torridonian Age), and although boulder clay occurs quite near, below Melbost, the junction of the boulder clay and beach was not shown in section. The height of these ancient beaches was found by measurement to be 10 feet, both on the north side of the peninsula at Melbost and at the western end of the south side. Since 1933 the section on the south side has been covered over by the building of an embankment to protect the road. Where there are no sea-walls, the sections are much obscured by modern beach sand.

Eight species of Mollusca were found in the marine deposit between the north side of Loch Branahuie and Melbost:

Donax vittatus da Costa.
? *Solen marginata* Montagu. (*Solen vagina* Lamarck.)
Patella vulgata Linné.
Gibbula cineraria Linné.
Littorina littorea Linné.
Littorina littoralis Linné. (*L. obtusata* Linné.)
Trivia europæa Montagu.
Purpura lapillus Linné.

These shells represent intertidal conditions, except for *Donax vittatus*. According to Stephen (1930, p. 532), this species lives at or below low-water mark at the present day in the Outer Hebrides, but empty valves are washed up by wave action to high-water mark. Elton found empty valves of *Donax vittatus* similarly washed up on the shore of Pabbay (South Harris), and Baden-Powell has also found valves of this species in a like situation at Studland in Dorset and at St Andrews (Fife). The presence of this shell as a fossil is therefore no indication of the depth of deposition, and the assemblage as a whole represents the intertidal zone. As regards climatic indications, all the species in this list are to be found living round the Outer Hebrides at the present day.

If this deposit at Loch Branahuie is a raised beach, the amount of submergence is between 5 and 15 feet. It is therefore possible that we are dealing here with a raised beach of the same age as that at Galson, but much evidence is needed before this can be considered as proved. It is also tempting to correlate with Gregory's raised beach at Lochmaddy, at a height of 10 to 12 feet, but one would like to see more faunal or archæological evidence before coming to a decision about this. There does, however, appear to be a bench cut in the Stornoway Conglomerate on the Eye Peninsula, which may be a continuation of the Branahuie

raised beach. This feature is mentioned and figured by Jehu and Craig (1934, p. 865, and pl. ii. fig. 2), and this site at Dun, near Garrabost, was investigated in 1935; the height of the bench was only 5 feet above present high-water mark, and it certainly has the appearance of a marine-cut platform, but it is difficult to decide whether it represents differential movement of sea-level.

6. Conclusions.

The facts which have been established by the excavations at Galson are that—

(1) There is a raised beach on the west coast of the Island of Lewis at a height of 10 to 25 feet above existing high-water mark.

(2) This raised beach was formed earlier than an overlying kitchen-midden, which has been dated by its archæological content to the early part of the Christian Era. The raised beach is also probably earlier than an Iron Age earth-house at the same site.

(3) This raised beach is believed to be younger than a greenish-coloured boulder clay at Galson, but verification is needed of this relation.

(4) The animal remains in the midden, besides giving a picture of the food-habits of the people, show that the fauna about 1500 years ago was very similar to that of the present day. One species, however—the wild cat—was not previously known to have lived in the Outer Hebrides. There is a suggestion that the fauna of Lewis is derived partly from an earlier woodland fauna. This wild cat, the recently extinct pine-marten, the occurrence of long-tailed field mice (*Apodemus*), whose nearest relatives on the mainland are predominantly woodland forms, the pigmy shrew (partly a woodland form), an island race of song-thrush, and also the presence of blackbird in the midden, all support this suggestion. The woodland facies of the fauna is especially striking in view of the almost entire absence of any trees in the Outer Hebrides except those planted within the last hundred years or so, or buried in older peat deposits.

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MONDAY, 10*th May* 1937.

SIR GEORGE MACDONALD, K.C.B., President, in the Chair.

A Ballot having been taken, the following were elected Fellows:—

JOHN CARTWRIGHT, Architect, Ancient Monuments Department, H.M. Office of Works, 40 Carrick Knowe Hill, Edinburgh, 12.
FRANK GRAY, Balnagowan School, Downfield, Dundee.
JOHN MCINTOSH, M.A., Glendelvine Schoolhouse, Murthly, Perthshire.
CHARLES J. MCLELLAND, 12 De Walden Terrace, Kilmarnock.
Rev. JAMES PATRICK STEVENSON, B.A., St Mary's Vicarage, Prince's Road, London, S.E. 11.
WILLIAM ROSS YOUNG, "Drumveigh," Barnton Avenue, Edinburgh, 4.

There were exhibited:—

(1) By the Rev. E. B. A. SOMERSET, The Vicarage, Mexborough, near Rotherham.

A Stone Mould for casting a crescentic or horse-shoe-shaped object (fig. 1), found in a heap of stones on the roadside about 2 miles south of Beattock, Dumfriesshire.

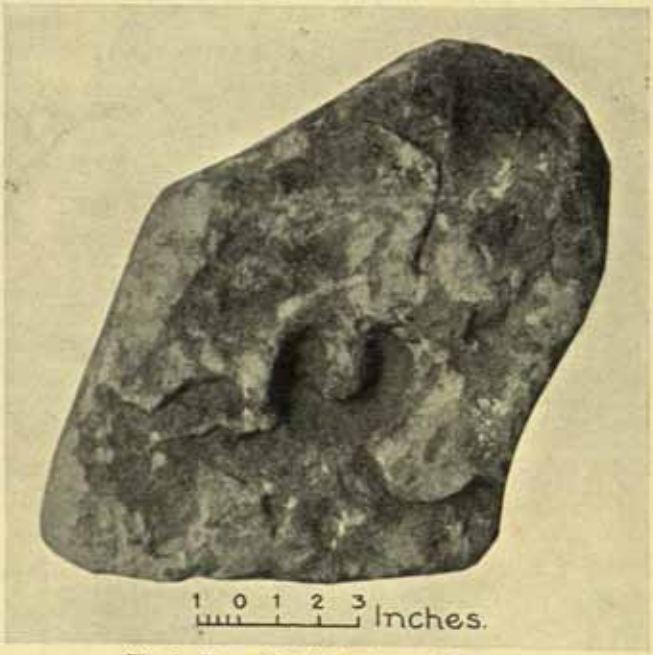


Fig. 1. Stone Mould found near Beattock.

Fig. 2. Part of Beaker found near Kemnay.

(2) By W. Douglas Simpson, D.Litt., F.S.A.Scot.

Part of a Beaker Urn (fig. 2), measuring 3⅜ inches across the base, found in a gravelly mound in the angle where the road to Castle Fraser branches off the main Donside turnpike road just west of Kemnay, Aberdeenshire.

There was also exhibited a drawing of a rim and wall fragment of a Neolithic vessel of dark brown ware, decorated by flutings made by the tips of the fingers (fig. 3), found at the foot of an electric pylon on the south side of the river Spey, between Grantown and Newtonmore.

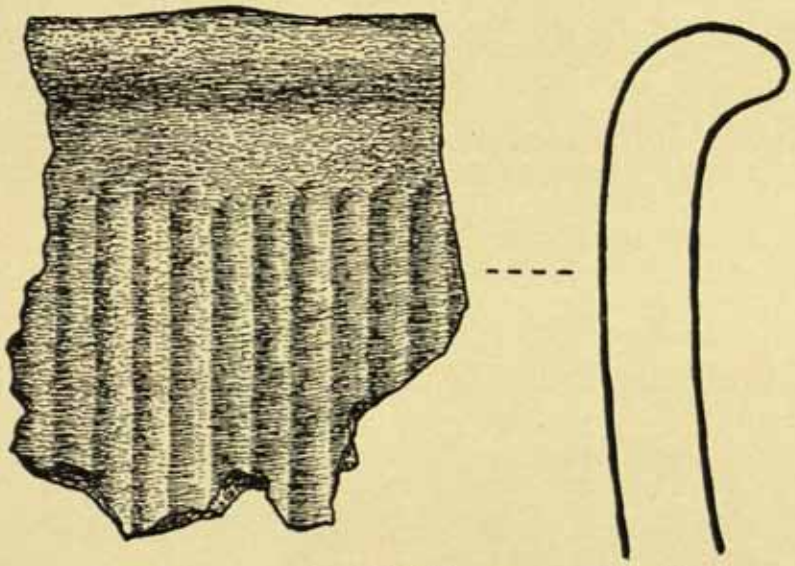


Fig. 3. Fragment of Neolithic Pottery from Speyside. (¼.)

The following Donations to the Museum were intimated, and thanks voted to the Donors:—

(1) By Colonel Duncan F. D. Neill of Keills, through H.M. Commissioners of Works.

Shaft of free-standing Cross of Schist, measuring 7 feet 5¼ inches in height, and 12¾ inches by 5⅜ inches at the base, tapering to 9¾ inches by 3½ inches at the top (fig. 4). The head, which bore the Crucifixion on the face and foliaceous designs on the back, was taken away by some unknown person some years ago. Below the head the ornamentation on front is effaced, but part of it has been foliaceous. At the bottom

is an inscription in Lombardic capitals, in sixteen lines, of which the last fourteen have been read as . . . OS INSU/LARUM :/DOMIN/ A : ET 10/HANNE/S : PRES/BITER : /AC : HER/EMITA : /ISTE : INS/ULE

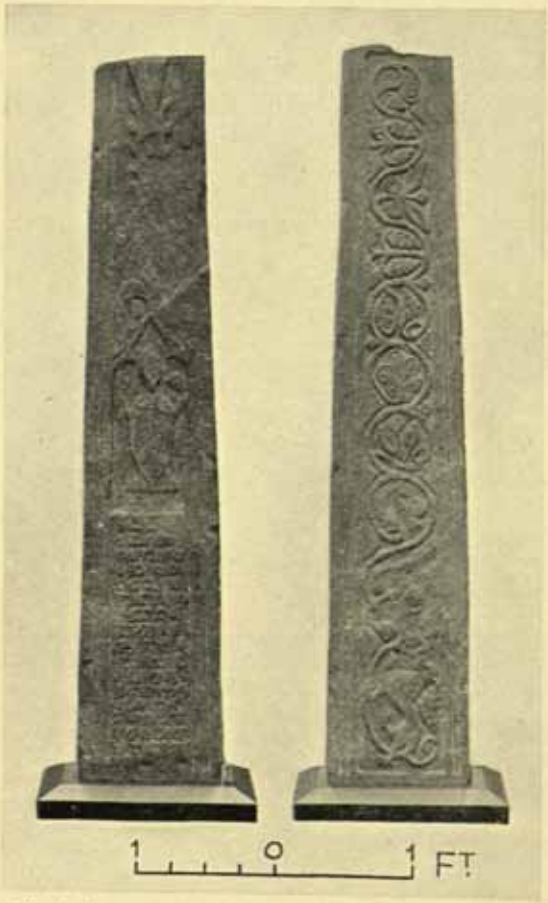


Fig. 4. Cross-shaft from Eilean Mor, Kilmory, Argyll.

ME : /FIERI : F/ECERU/NT. Above the inscription is an ecclesiastic wearing a mitre and chasuble, with a crosier in his left hand. On the back of the shaft is a foliaceous scroll with a wavy central stem, which springs from the tail of a beast at the foot. The shaft was broken through the middle, but it has been fixed together again. (See Captain White's *Archæological Sketches in Scotland—Knapdale*, p. 77, Plates XXXI. and XXXII.) From Eilean Mor, Kilmory, Knapdale, Argyll.

(2) By WILLIAM TRAILL, C.E., J.P., F.S.A.Scot.

Stone and Bone Objects and fragments of Pottery from a prehistoric building at Hower, Papa Westray, Orkney. (See previous communication by William Traill, F.S.A.Scot., and William Kirkness, F.S.A. Scot., p. 309.)

(3) By R. STUART BRUCE, Symbister House, Whalsay, Shetland.

Communion Token, Canisbay Free Church, 1843.

(4) By Mrs TURNBULL, Girlsta, Gullane.

Charm Stone in form of a heart-shaped water-worn brown pebble, used for curing human ailments, and, latterly, those of animals, from Whalsay, Shetland.

Old Shetland Plough, from Whalsay, Shetland.

(5) By DAVID FERGUSON, Stonefield Hill, Rosewell, Midlothian.

Veterinary Surgeon's pestle-shaped instrument of turned wood, with ivory mounts, measuring 9⅛ inches in length, for dislodging food stuck in the throats of animals.

Watch Chain of plaited Human Hair.

Pair of old silver-framed Spectacles with hinged side-pieces, in contemporary metal case.

Seven Quill Pen Nibs in original box, sold by W. Weddell, 48 South Bridge, and 7 West Newington, Edinburgh.

Old Box of Compasses, Dividers, and Ivory Scale.

(6) By THE TOWN COUNCIL OF BO'NESS.

Arch Voussoir of light grey sandstone, from the roof of a Roman bath-house at Carriden, Bo'ness. (See subsequent communication by Sir George Macdonald, K.C.B., President.)

(7) By E. S. REID TAIT, F.S.A.Scot., F.R.S.G.S.

Fragment of a Cross-slab from the Churchyard at Whiteness, Shetland.

Mr Tait has sent the following note regarding the discovery of the stone:—

The churchyard of South Whiteness, in the parish of Tingwall, is situated at a place appropriately named "Kirkhouse," and tradition speaks of a church there dedicated to St Olaf. Of this building there is

now no trace, but the ground round about has been used as a burial-place for many centuries.

During the enlargement of the churchyard, which took place in 1933, the workmen employed to rebuild the walls unearthed a fragment of stone on which marks of sculpturing were plainly evident. Beyond a mere cursory examination, however, it was laid aside and no further notice taken of it. Some months afterwards I happened to be in the

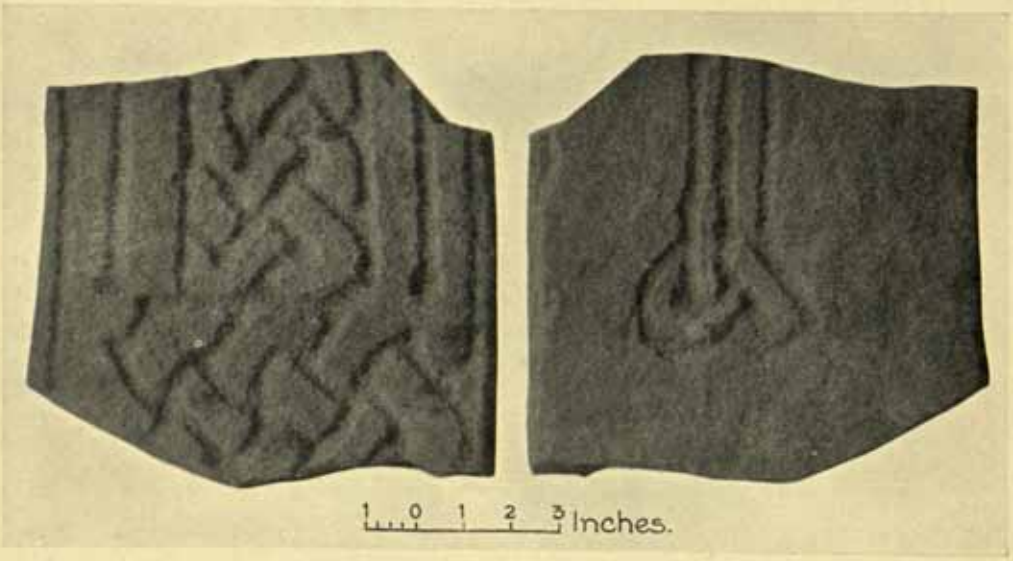


Fig. 5. Part of Cross-slab from Whiteness, Shetland.

vicinity and was informed of the discovery. After a search I was successful in rediscovering the fragment, and after carefully washing it was delighted to find on it an interlaced pattern of an unmistakably Celtic character (fig. 5). Without doubt, taking into consideration the place where it was found, this fragment is a portion of an early Celtic sculptured cross-slab, for though in the district of Whiteness nothing of outstanding importance from an archæological point of view has been discovered, its fertile valleys and sheltered arms of the sea would undoubtedly prove an attraction to early settlers. The fragment measures 9½ inches broad by 9 inches deep, and is 1⅛ inch thick. On one side are two panels bearing interlaced designs, one vertical and the other horizontal; on the opposite side is the lower part of what appears to be the shaft of a cross consisting of two vertical mouldings terminating in a knot at the foot.

The following Purchase for the Museum was intimated:—

Pair of Clogs or Pattens, with wooden soles hinged in two places, a leather cap for the toe and a socket of leather for the heel, from the Covenanters' House, South Queensferry.

The following Donations to the Library were intimated, and thanks voted to the Donors:—

(1) By His Majesty's Government.

Calendar of the Liberate Rolls. Henry III. Vol. iii. A.D. 1245–1251. London, 1937.

(2) By Miss J. C. C. Macdonald, F.S.A.Scot.

National Art-Collections Fund. Thirty-Second Annual Report, 1935. London, 1936.

(3) By The British Broadcasting Corporation.

B.B.C. Annual, 1937. London, 1937.

(4) By An Anonymous Donor.

Centenary Edition, XII.—The Letters of Sir Walter Scott, 1831–1832, and Appendices of Early Letters. London, 1937.

(5) By The Hon. Lord St Vigeans, LL.D.

Chips from Old Stones. By the Author of "Hill Forts and Stone Circles of Ancient Scotland." Edinburgh, 1881.

Some Runic Stones in Northern Sweden. From the Papers of the late Professor Dr Carl Säve. Edited by Professor Dr George Stephens. Upsala, 1878.

Œstergötlands Runinskrifter. By Erik Brate. Stockholm, 1915.

Vestlandske Graver fra Jernalderen. By Haakon Schetelig. Bergen, 1912.

Arkeologiske Tidsbestemmelser av Ældre Norske Runeindskrifter. By Haakon Schetelig. Christiania, 1914.

Fouilles faites à Carnac (Morbihan). By James Miln. Paris, 1877.

Collection of off-prints of archæological papers.

(6) Bequeathed by Mrs MARY BEATRICE STUART.

Facsimile of an Ancient Heraldic Manuscript emblazoned by Sir David Lyndsay of The Mount, Lyon King of Armes, 1542. Edited by David Laing, LL.D. Edinburgh, 1878.

The Letters and Journals of Robert Baillie, A.M., Principal of the University of Glasgow, 1637–1662. 3 Vols. Edinburgh, 1841–1842.

Etchings, chiefly of Views in Scotland. By John Clerk, Esq., of Eldin, 1773–1779. Edinburgh, 1825.

Biographical Notices of Thomas Young, S.T.D., Vicar of Stowmarket, Suffolk. By the Editor of Principal Baillie's "Letters and Journals." Edinburgh, 1870.

The Poetical Works of Sir David Lyndsay of The Mount, Lyon King of Arms. 2 Vols. Edinburgh, 1871.

Various Pieces of Fugitive Scottish (*sic*) Poetry; Principally of the Seventeenth Century. Second Series. Edinburgh, 1853.

A Compendious Book of Psalms and Spiritual Songs, commonly known as "The Gude and Godlie Ballates." Edinburgh, 1868.

(7) By Mrs ALEXANDER ROBERTSON, Dunmullin, Liberton.

Warrant giving authority to the Master and Worker of the Mint to coin gold and silver Monies, dated 7th March 1851, and superscribed by Queen Victoria.

The following Communications were read:—

I.

MISCELLANEA ROMANO-CALEDONICA. I.

By Sir GEORGE MACDONALD, K.C.B., LL.D., D.Litt., F.B.A., H.R.S.A., President.

Under this general heading I propose, with the permission of the Society, to bring together from time to time a series of notes which are too disconnected to combine into a single paper, but which nevertheless all deal with Roman Scotland.

1. Roman Remains in Aberdeenshire.

In a well-known letter addressed to Captain Shand on 12th May, 1788, and reprinted in vol. vii. of the *Proceedings*,[1] General Melville refers in complimentary terms to a "vigorous paper" which Shand had communicated to the Literary and Antiquarian Society of Perth earlier in the year. The paper was never published, and after fruitless endeavours to discover its whereabouts I made up my mind that it was hopelessly lost.[2] Dr Callander, however, when he was resident in Perth during the War, succeeded in disinterring it from the archives of the Museum there, and kindly sent me a copy. Last year I had an opportunity of examining the original for myself. The courtesy of Mr John Ritchie, the Keeper, enables me to reproduce it here.

The full title is "Some observations on the great Roman road, and adjacent Camps, and Stations to the north of Graemes dyke. By Captain Alexander Shand of the Royal Artillery," and place and date are given as "Perth, 26th February 1788." The text, reproduced with its prodigality of commas and its occasional eccentricities of spelling, runs as follows:—

> Authors who have written upon the antiquities of our country, observe, that the Roman highways, enter Scotland in three different places, by the east, midland, and western borders; and uniting together at Graeme's dyke in the neighbourhood of Carron water, the great road passes on towards Stirling, then passing the Forth, advancing up Strathallan, and crossing the rivers of Erne, and Tay, in its progress to

[1] Pp. 29 ff. The description of the paper as "vigorous" is due to a mistake which has crept in at some stage not now ascertainable. Melville's draft (which I have seen) reads "ingenious."

[2] *Proceedings*, vol. l. (1915–16) p. 349.

the north-east, it ceases to be discoverable not far from Kerrymuir, in the County of Angus. From the last mentioned place, however, there is the greatest reason to believe, that it had been formerly continued, at least, as far as Stonehaven, and this opinion is generally held, among the country people in the neighbourhood of Perth, who distinguish this ancient work, on account of its great length, by the name of the "lang Causey."

In tracing the road thro' those countries where it has been best preserved, we may observe it, marked out into spaces, nearly equidistant, not unlike our modern stages, or rather, resembling, the several days marches, of a considerable Army, penetrating with caution, into an Enemy's country, and forming entrenched posts every night, according to the well-known and established practice, peculiar to the Roman troops. Those Camps being afterwards found convenient halting places, for the Army, in advancing to, or retiring from, the Enemy, would of consequence be strengthened, with additional, more substantial, and permanent Works. Accordingly we find upon the road, the vestiges at Camelon, Ardoch, Strathgeth, Bertha, and Coupar of Angus, to have belonged to Works of a superior kind to the more common, and ordinary Summer Camps, which were only intended for a temporary defence. Further evidences of the consequence of those posts, appear from the great number of coins, arms, and other Roman monuments, which curious observers have discovered in, or near them—and if we add to this, that great pains had been taken to cover them on the side of the highlands, by occupying with other military works, all the avenues, passes & defiles leading into the Enemy's country, we may justly infer, that the above mentioned posts are no other, than the stations of the Roman Ititeneraries. And here it may not seem unworthy of observation that the most considerable passes were always secured by the most considerable Works. At Calendar of Monteith, for instance, the camp has been very extensive and the ramparts of great heighth, and Strength. At Dialgen-Ross on the Erne, and Fian-te-ach in the opening of the Defile of Glen-Almond, they are only summer Camps, and the former of very small extent. But the ancient fortifications on the Tay, some of which are still in great preservation, and have been traced as high as Fortingall in the bottom of Glen-lyon, are the strongest of all the Camps, and posts, which cover the great and principal road, that, being the most remarkable pass of any thro' the mountains, and might have been, perhaps, the tract of the western Itinerary to Inverness.

The appearance of the Roman road near Kerrymuir (as already mentioned) pointing to the northeast; the number of Camps between Coupar and Stonehaven, supposed by Antiquarians, to be of Roman construction, and the posts covering the passes thro' the mountains, at Fettercairn and Fordun lately described by a gentleman of the first mentioned place, are all proofs that the Stations of the Itinerary, tho' now effaced by time and modern improvements, must have had situations in the eastern part of the great Strath, similar to those, in the countries watered by the Allan, the Erne and the Tay, and some of which, the

Vestiges may one time or other be discovered, by industrious and careful observation. But hitherto it seems that writers, have either not thought it of sufficient importance, to trace the Camps, or did not imagine that they extended further than the celebrated Roman Work, called the Ré Dykes in the eastern part of the county of Mearns, on the head of the small river of Cowie.

Nevertheless many distinct remains are to be seen farther to the north, tho' they have not as yet become objects of much attention to the observers of Antiquity, which are not only in as high preservation, but appear as much in the stile, and character of Roman Works, as any to the south of the Grampian mountains. Upon the top of the Hill of Barra a short mile from Old-Meldrum, and about three from Inverurie-upon-Don, are antique entrenchments executed exactly in the same manner as the prætorium at Ardoch, only the profils, are not so lofty, tho' everywhere as distinct, and the parts as well defined. The figure is a square, only rounded off at the angles, and the circumference of the interior Agger measures upwards of four hundred common paces. The four gates ly two and two opposite to one another pointing vy accurately to the cardinal points of the Compass, and their breadth and other dimensions as exact as if the work had been built but a few years ago.

The hill of Barra rises no higher above the level of the adjacent country, than two hundred feet perpendicularly, and it would appear, that formerly on the north west side, there had been a very long range of swamps, and bogs, extending along a considerable part of the northern boundary of the Country of Garioch. But both upon that, and opposite side, several Entrenchments and ditches differing widely from Farmers works, have been discovered, and a gentleman in Old-Meldrum is in possession of a Weapon, or instrument resembling a small ax, which is made of a metal not unlike Roman brass dug out of those works a few years ago. The work at the south west foot of the hill of Bethelnie in the parish of Fyvie, and three miles northwest from Old-Meldrum, has every appearance of being a military one. It is also a square, of about sixty or seventy paces to a side, very entire, and the Ditch and rampart of the dimensions usually given to the temporary Camps of the Romans. Proceeding across the Country in the same north west direction, towards the head of the Ythan, there appears upon, and close to the, southern bank of that stream, about a short mile below its two well known sources, one of the most beautiful remains of an ancient Encampment, that perhaps exists any where in the northern parts of the kingdom: but it will be needless to enter into any particular description of it, as it appeared, when last inspected to be of the same, figure capacity, and properties, as that of Battles dykes, in the parish of Oath-law, a good account of which has already been given by the reverend Mr Jamieson of Forfar. It lies about fifteen miles from the Castellum of Barra, and the old people of the Country call it the Ré-dykes the same apellation as is given to the famous camp on Cowie water. Those who are critics in the English, Teutonick, and Gaelick tongues, seem to think that War dykes, Heer faulds, and Ré-dykes have nearly the same meaning. Ré

or Rûi having the comprehensive signification of King, the people assembled in Rendezvous, and the host, which last is the literal English for the modern Saxon word Heer. As the Ré-dykes therefore is a general appellation, the Camp upon Ythan may be distinguished by the name of the Ré-dykes of Glen-mailen, a farm in the parish of Forg adjacent to the north side of it, and from which it is separated by the above mentioned stream, and its steep banks. To give some idea of the extent of this Camp, tho the farm opposite to it maintains a good many families, it is thought not to comprehend so many Acres of ground. About a short mile from the camp, and north from Glen-mailen are several chains of pits on a parallel to the Camp, (on an East and West line), very much like those little places which are sometimes dug and thrown up for Centries posts, in the modern practice of War, when it is necessary to push them forward within the range of the Enemy's small-arms. Also on the south west part of the camp at the distance of about two miles, on the skirts of the hill of Culsalmond, or Tilly murgn is a very large, and deep entrenchment. And in many other parts of the north Country there are said to be Works of the same nature particularly on the Dovern and the Spey, which however, tis believed, have never been properly inspected much less described.

With regard to Roman Geography in general in the North, the historians of that people, inform us that the Emperor Severus penetrated to the extremity of the Island: and as he cut down the Woods, and drained the swamps, with immense labour during the course of that progress, we cannot imagine that so accomplished an Officer in such difficult, and dangerous situations, could possibly omit fortifying his Camp every night, after the Roman manner. Hence we have a right to conclude, that there must at this day be some remains of the operations of so considerable an army, and if they were well explored, perhaps the camps of Severus would appear as remarkable on the north side, as those of Agricola on the south side of the Grampian mountains, and the Route of the Itinerary be ascertained as far as Inverness, or Tain on the northern boundary of Rossshire.

It is observed by those who have read the Roman Itineraries, that none of the places mentioned in them have a more striking relation in sound, than the Latin word Ithuna, with the modern name of Ythan; But whether the Ré-dykes of Glen-mailen, be the Statio ad Itunam of the Ancients; or whether it be a summer Camp covering a post of more importance about Fyvie or Ellon where the Ythan flows thro' the flat country, are matters that must remain doubtful untill the geographical Antiquities in the neighbourhood of that river have been more carefully examined.

While some of the references in this paper, such as those to the "Roman Camps" at Callander and in Glenlyon, will hardly seem very convincing to the modern reader, it contains not a little that merits careful attention. For the moment I am concerned only with Aberdeenshire. Glenmailen I have already dealt with at some length in the

Proceedings,[1] when I mentioned that Shand was its discoverer. At that time I was unaware that his own account of it was still in existence, and I am glad to have an opportunity of reprinting it. It is worth adding that the archives of the Perth Museum contain another description of this camp, accompanied by an illustrative plan. The description is somewhat fuller than Shand's, but does not supplement it on any material point. The writer, whose name is not given, seems to have been familiar with what his predecessor had said, although he had probably visited the site himself. Whether it was he who was responsible for the plan it is impossible to say, but the latter bears to have been executed in "May, 1789, by Theodore M'Ronald." While differing in a good many unessential details, it is virtually the same as the plan published a year or two later in Roy's *Military Antiquities* and originally obtained, as I have suggested elsewhere,[2] from Shand. That the two should agree in the outline of the entrenchments is in no way surprising, but it cannot be a coincidence that the letters marking the gates and similar features are identical. M'Ronald had certainly seen Shand's plan.

The description of the "Castellum on Barra Hill," as given in the paper, provides an enigma which I have so far been unable to solve. It is compared with Ardoch, the lines being "everywhere as distinct," although "not so lofty," and "the parts as well defined." Moreover, "the figure is a square, only rounded off at the angles." Again, "the four gates ly two and two opposite to one another . . . and their breadth and other dimensions as exact as if the work had been built but a few years ago." Shand had evidently told Roy about it, and Roy had been duly impressed, for on a scrap of paper in his handwriting, sent to General Melville when a visit to Scotland was in contemplation, the "Castellum on Barra Hill" is noted as deserving of a visit. The scrap is included in a bundle of the General's papers which Mr E. W. M. Balfour Melville has kindly allowed me to examine.

Now Chalmers in his *Caledonia*, which was published less than twenty years after the date of Shand's paper, has a full-page plan of what he calls "the British fort on Barra Hill in Aberdeenshire."[3] It is circular, with three ditches and only a single entrance. Anything less like a typical Roman *castellum* it would not be easy to imagine. I have never visited the spot myself. But Dr Douglas Simpson, who knows it well, assures me that the plan in Chalmers's *Caledonia* is reasonably accurate, and that there is no entrenchment in the neighbourhood that he can recognise

[1] Vol. I. (1915–16) pp. 348 ff.
[2] *Archæologia*, vol. lxviii. p. 212.
[3] *Op. cit.*, vol. i. p. 90 (facing).

as corresponding to Shand's description. What he says is borne out by the language used in the *Statistical Account* (1793),[1] as well as by the O.S. Map. There I leave the matter in the meantime.

2. Fife, with a Postscript on Cocceius Firmus.

So thoroughly did I enjoy Mr Birley's stimulating paper on Cocceius Firmus, when he read it to the Society a year ago, that I feel guilty of something very like ingratitude in criticising it now that it has appeared in print. At the same time, as I indicated in the course of the discussion to which it gave rise, I disagree profoundly with the only part of it that has a direct bearing on the history of Roman Scotland. Mr Birley has gone out of his way to revive a forgotten heresy, and the revival is all the more dangerous because of the attractive garb in which it is presented. In fairness to those who may be led astray, I cannot well refrain from saying what I think.

The root of the trouble, as it appears to me, betrays itself even in the interesting and lucid introductory section. Although Mr Birley is well aware of the distinction between salt-pans and salt-mines, he has allowed himself to ignore it, and yet from the point of view of his own argument the difference may be vital. The Latin word *salinæ*, like the English "salt-works," is ambiguous. If it generally means salt-pans, that is simply because the method of winning salt by evaporation was the one that was most familiar to the Romans. Blümner tells us in Pauly-Wissowa (I.A. 2077) that it was also used of salt-mines—in preference to the rare *salifodinæ* of Vitruvius or the awkward and no less rare *salinarum metalla* of Solinus—and he actually cites as examples both of the passages which Mr Birley quotes from the *Digest*. Presumably he reasoned somewhat as follows. In point of severity a sentence of condemnation to the mines (*damnatio in metalla*) fell but little short of the death penalty itself: *proxima morti pœna metalli coercitio*, as it is put elsewhere in the *Digest* (XLVII. xix. 28). Indeed, if we can trust the pictures drawn by Diodorus (v. 38) and by Cyprian (*Ep.* 77), it must often have been less tolerable. In the circumstances no jurist would have equated *in opus salinarum* or *in salinas* with *in ministerium metallicorum*, unless he had been speaking of salt-mines, and not of salt-pans, where the hard labour was performed by the sun rather than by convicts, and where the task of the workers, including their women attendants, can have been no more exacting than, say, that of the average farm-hand.

[1] *Op. cit.*, vol. ix. p. 437.

If we could be quite sure that Blümner was right, that would be conclusive. As there is no rock-salt in Fife, there can have been no salt-mines there to serve as a penal settlement. However much we may regret it on sentimental grounds, this would mean the failure of Mr Birley's ingenious endeavour to secure for Scotland the honour of having provided the *Digest* with a leading case. But the matter may not be so simple as all that. In the passage in which he brings the two together, Ulpian is dealing, not with punishments as such, but with sentences determinate and indeterminate in point of time, and he may merely mean that women might be sent *in ministerium metallicorum* or *in salinas* either for life or for a limited number of years. That is, the connection in his mind between these two forms of punishment might be explained by the similarity of the arrangements for allowing a court to fix the length of the sentence. In other words, Blümner may be going too far in interpreting Ulpian's language as implying that *damnatio in salinas* was comparable in severity to *damnatio in ministerium metallicorum.* Whether he is doing so or not, I do not presume to say. But, so long as there is a doubt, we are bound to consider the alternative of salt-pans.

Here the weakness of Mr Birley's argument lies in the fact that the shores of Fife are in no way better suited for salt-pans than are countless other points on the Scottish coast from Maidenkirk to John o' Groats. Indeed, if the *salinæ* of the *Digest* are to be located in Scotland—which I greatly doubt—a much more appropriate place for them would be the southern margin of the Firth of Forth, where the manufacture of salt was long an important industry (as witness the name of Prestonpans), and where there would always be a risk of *clandestinos latrunculorum transitus* from the opposite side of the estuary. So far as I can judge, there is no justification whatever for raising the ghost of a Romanised Fife, and it behoves us to see whether it can be laid again.

This should not be very difficult. The only new evidence Mr Birley brings forward is that of the hypothetical salt-works, and he more than hints that these might have been found if Scottish antiquaries had taken the trouble to look for them. He evidently does not realise how careful was the search that some of our forefathers made in Fife for Roman remains of any sort. Unless it be the tract of country through which the Antonine Wall runs, no district in Scotland received so much attention of the kind from Sir Robert Sibbald. It occupies two of the three sections of his *Conjectures Concerning the Roman Ports, Colonies, and Forts, in the Firths, Taken from their Vestigies and the Antiquities, found near them*, which was published in 1711, and it also figures largely in his *Commentarius de Gestis Agricolae in Scotia*, where it is made the scene

of the sixth campaign. "Sandy" Gordon, who naturally included it in his *Itinerarium*, was confident that he had discovered at Lochore the very camp in which the Ninth Legion had so narrowly escaped disaster. Military men, like Melville and Roy, who understood the strategy of the Roman invasion and conquest, did not think it worth their while to waste time on the peninsula. Their neglect of it was outweighed by the zeal of the parish ministers who contributed to the *Statistical Account*, a phase of research which culminated in the *Interesting Roman Antiquities Recently Discovered in Fife* by the Rev. Andrew Small. Writing in 1823, Small was able to claim credit for the identification, not only of "Mons Grampius," but also "of the position of five Roman towns, and of the site and names of seventy Roman forts." Is it conceivable that so successful a seeker could have missed the salt-works, if they had been there for him to find? Seven years later Small's theory of "Mons Grampius" was defended at great length by Lieutenant-Colonel Miller in a paper which is printed in *Archæologia Scotica*.[1]

The outcome of all this feverish activity was about as meagre as it is possible to imagine. Apart from one or two hoards of the same character as those unearthed in Kincardineshire and farther north, fewer Roman coins have been found in Fife than in the Orkneys, while in Mr James Curle's well-known list of other Roman objects the county cuts a poor figure as compared with, say, Angus. As for the seventy-five Roman towns and forts, they have long ago vanished into thin air. Even Robert Stuart, *ultimus Romanorum* in the sense that he was the last of the old school of theorists, had little to say in defence of any of them, except perhaps Lochore which he was "inclined to believe" had been the scene of the attack on the Ninth Legion. Lastly, only a few years ago the officers of the Monuments Commission combed the whole district systematically without finding a vestige of any entrenchment that could reasonably be said to resemble Roman work. Nor is this surprising. Fife in itself had but small attraction for invaders: the interior was full of swamps and forests until well on in the Middle Ages. Strategically, again, it was not worth the bones of a single Roman soldier, so long at least as the Roman fleet could keep command of the sea.

The one potential danger-spot was at the north-west corner, where unruly tribesmen, who had made their way either along the coast or through Glenfarg, might have mustered for a raid on the Ardoch-Inchtuthil line. The fort at Carpow, which stood just outside the county boundary, on a magnificent site overlooking the confluence of the Earn with the Tay, may have been partly intended to thwart any

[1] Vol. iv. pp. 19 ff.

movement of the sort, although its main purpose was probably to serve as a naval station within easy reach of Strageth, some ten or a dozen miles inland. Mr Birley, to be sure, considers that the Ardoch-Inchtuthil line was a *limes* laid out for the protection of a Roman Fife. But, if so, it was oddly designed, the northern extremity being left hanging in the air in a fashion which positively invited the tribes of the north-east to take it in the rear. Nor do I see any ground for assigning it, as he does, to the second century. On the contrary, I greatly prefer the explanation of its date and purpose which is suggested by Mr Richmond in his preliminary account of the fort at Fendoch.[1]

Having eased my conscience in regard to Fife, I may be allowed to turn for a moment to Mr Birley's main thesis. I do not think I have weakened his case by ridding him of the incubus of Fife. The identity of the three individuals named Cocceius Firmus remains an interesting possibility, and it has never been anything more. I am not sure that his hearers realised how heavy was the burden of proof he was assuming; in that respect the case of L. Tanicius Verus was a much simpler proposition. Thanks to the Emperor Nerva, Cocceius was anything but an uncommon second-century name—the index to Dessau's *Inscriptiones Latinae Selectae* mentions about two dozen different men who bore it—and the *cognomen* Firmus was even commoner. The combination may well have been far from infrequent. It is true that in two out of the three cases the designation *centurio* is added. But, if one turns up any common combination of names in the British *Monthly Army List*, it will be seen that the coincidence does not necessarily carry us very far. On the other hand, there is a stronger card which Mr Birley has somehow refrained from playing, although it figured prominently in his hand.

No part of his paper seemed to me more likely to carry conviction than that in which he sought to forge a link between Cocceius Firmus and the Danube Valley by means of the Auchendavy altars. Though speculative like the rest, the idea has an air of probability, and the argument would have been substantially reinforced if the salt-works had been placed in the Danube Valley too. Nowhere else in Europe are there richer beds of rock-salt, and we know from epigraphic evidence that there were *salinæ* in Dacia. Mr Birley is familiar with the inscriptions, but he dismisses them on the ground that in Dacia "the salt was not worked directly by the State," and that private contractors "would hire free labourers or employ slaves." Unless this view has something more than the mention of *conductores* behind it, it is scarcely

[1] *Proc. Soc. Ant. Scot.*, vol. lxx. (1935–36) pp. 405 f.

likely to command universal assent.[1] But we have little or no information as to the arrangements for working salt, and in these circumstances one cannot safely be dogmatic. Where an authority so learned as Rostovtzeff admits that "the organization . . . of the extraction of salt remains almost a blank in our knowledge," [2] it would be idle to embark on a discussion.

3. Cramond.

It has long been matter of common knowledge that there was a Roman fort at Cramond. The finding of inscriptions and of pottery fragments leaves no room for doubt upon the point. The site, overlooking as it does the mouth of the River Almond, is thoroughly characteristic, but the scanty records of the discovery of structural remains are too vague to enable us to determine the plan and dimensions of the *castellum*. The evidence, such as it was in 1928, is set forth in the Royal Commission's *Inventory of Monuments in Midlothian*.[3] The object of this note is to put on record a fresh item, which came to light no longer ago than last winter.

On 17th December Mr A. O. Curle and I paid a visit to Cramond, where he had learned that some houses were being built within what had presumably been the area of the fort. Looking over the ground that had been opened up, we noticed three broken hypocaust-pillars, as well as some odd stones which were blackened by fire. A workman told us that he had dug them up a few days before in excavating for the foundation of one of the new houses, and that he had also struck a line of cobbles. The cobbles indicated a street, while the broken pillars and blackened stones suggested a Bath-house. The suggestion was confirmed a few days later. On 22nd December Mr Curle was informed that a further discovery had been made. Proceeding to the spot at once, he saw a piece of paving some 4 feet below the surface. The portion exposed measured about 6 feet by 2 feet 6 inches and was well laid, being apparently part of the floor of a room, doubtless the Apodyterium, which must therefore have lain at the south end of the suite.

The floor did not remain open very long. I went out next day, but a few minutes before I arrived it had been covered with hot lime. I was, however, able to note the exact position, which was immediately behind the wall on the left-hand side of the road leading down to the beach, and exactly opposite an electric standard which is set up a little

[1] See, for instance, Orth's article "Bergbau" in Pauly-Wissowa, Suppl. iv. pp. 108–155.
[2] *Social and Economic History of the Roman Empire*, p. 294.
[3] *Op. cit.*, pp. 38 ff.

to the north of the Church. The suite of Baths can thus be identified with the one that was broken into in the latter part of the eighteenth century, as we learn from Wood's *Ancient and Modern State of the Parish of Cramond* (1794): "In making a new road to *Nether Cramond*, in 1778, there was discovered, about twenty yards north of the porter's lodge of *Cramond* House, a pavement made of lime intermixed with small stones, about 9 inches thick, and 5 feet in diameter, though of an irregular form. Below this pavement were found burnt earth, charcoal, and several fragments of brown earthen pitchers, the mouths and necks of some of them in an entire state, with an ear on each side. Many pieces of bricks and tiles lay scattered about, the latter much thicker than those now in use, and marked with lines on one surface by way of ornament." The description of a ruined hypocaust is unmistakable. As the porter's lodge of Cramond House is a little north of the electric standard, the two sets of Baths are obviously one and the same. So far as can be judged, the building must have stood within the ramparts and not, as Baths frequently did, in an annexe outside.

4. Bridgeness.

Early in April of the present year a message reached the Museum that a cist had been discovered at Bridgeness. Mr Edwards, who was sent down to report, found that the term "cist" had been used under a misapprehension. In the course of operations connected with the development of a new housing-site, a deep trench for a drain was being cut down the middle of Harbour Road, which runs from north to south past Bridgeness Point, and in this, about 8 feet below the modern surface, a peculiarly shaped block of coarse sandstone (fig. 1) was lying among sand on the top of two flat, unworked boulders. The exact spot was 113 feet south of the northern side of the road into which Harbour Road debouches,[1] and about 81 feet north of the tablet built into the wall to mark the original position of the well-known Distance-Slab set up by the Second Legion. Two vertebræ of an animal were recovered along with the stones, and these have been identified by Miss M. Platt of the Royal Scottish Museum as belonging to the domestic ox.

When the sandstone block was brought to the National Museum, I at once recognised it as an arch voussoir of a type with which I had become familiar when examining the Baths at Chesters in 1930. It was the first specimen of the kind I had seen in Scotland, but Mr James Curle tells me that several were removed from the ruins of the Baths

[1] The measurement was taken from the N.E. corner of the building in the west.

at Newstead and utilised in building a now demolished arch at Drygrange. The great majority of the Chesters examples are of tufa. In every other respect, including size, the resemblance between them and the one from Bridgeness is extraordinarily close (fig. 2). An entirely convincing explanation of the use to which such voussoirs were put, originally

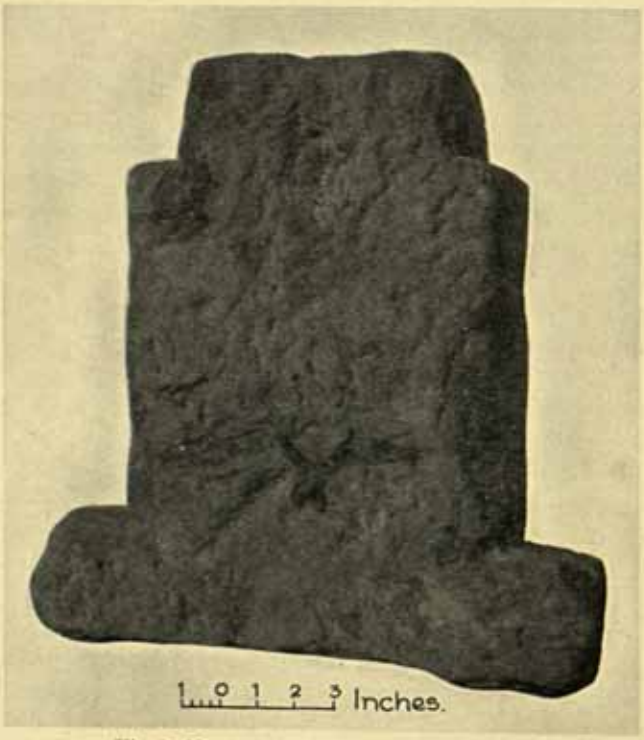


Fig. 1. Voussoir from Roman Bath-house.

suggested to me by Mr Parker Brewis, is incorporated in a paper which I contributed to *Archæologia Aeliana* and to which I would refer for full details.[1] Here I will only say that they seem to have been employed in Roman Bath-houses for the vaulted roof of the Caldarium or Hot Room. The ledges at the top and at the bottom were designed to support the ends of flat tiles, the space between which was left empty, after the manner indicated in the accompanying sketch (fig. 3).[2] The purpose of the device was twofold. Besides reducing the weight of the roof

[1] *Arch. Ael.*, Ser. 4, vol. viii. pp. 278 ff.

[2] This was executed, under Mr Brewis's direction, by Mr R. J. S. Bertram, and I am indebted to the Society of Antiquaries of Newcastle-upon-Tyne for permission to reproduce it here.

and therefore also the thrust upon the side walls, it provided a cushion of air which would maintain the temperature of the room below at a higher level than would have been possible with an ordinary ceiling.

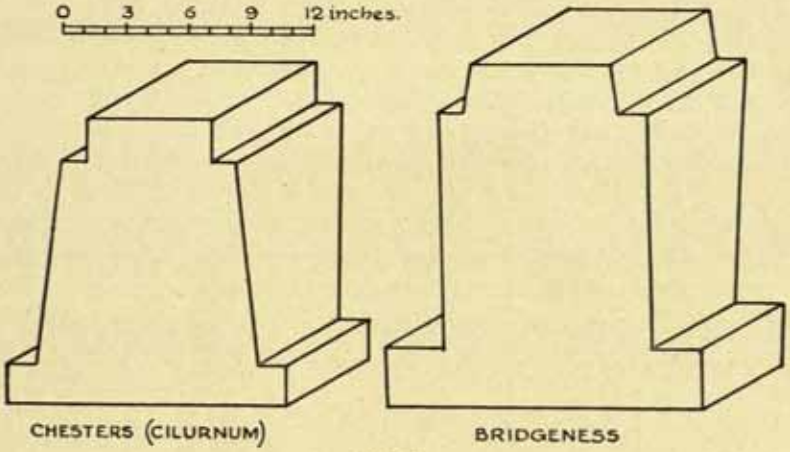


Fig. 2.

My first impulse on seeing the voussoir was to jump to the conclusion that it furnished evidence of the existence of a Roman Bath-house—and

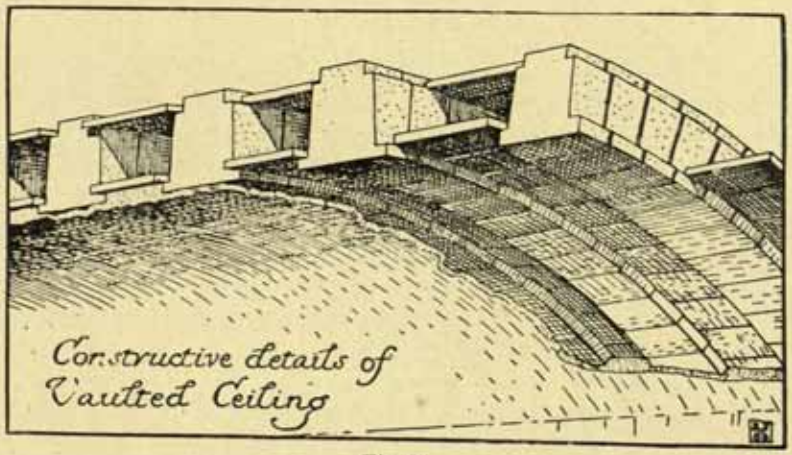


Fig. 3.

therefore of a Roman fort—at Bridgeness itself, whereas I had previously been of opinion that the "terminal station" was at Carriden, about three-quarters of a mile away.[1] A visit to the scene of the discovery

[1] *Roman Wall in Scotland* (2nd ed.), pp. 190 f.

made another explanation appear more probable. The field which is the only likely site for a fort happens to be the piece of ground which is being broken up for building, but in none of the cuts that had been made was there any sign of filled-up ditches, while not the slightest scrap of Roman pottery had been turned up. Mr Samuel Smith, who accompanied me and who has been good enough to maintain a watch, reports that the position is the same to-day. On the other hand, when I consulted the 25-inch Ordnance Map on which the late Mr H. M. Cadell many years ago marked out for me what his special knowledge led him to believe had been the line of the beach near the Point in Roman times, it turned out that the "find-spot" of the stones was 60 feet farther out to sea. Taking this in conjunction with the fact that they were lying among sand, we may infer that they had slipped overboard or been dropped in or near the little harbour when they were being shipped away for use elsewhere. That, of course, must have been after the Romans had left, and the voussoir may accordingly be spoil from Carriden. It should be added that the greater part of the 8 feet of superincumbent soil had been heaped up in comparatively recent times, when Harbour Road was constructed, and also that, as Mr Cadell's line was admittedly conjectural, it can hardly be made a basis for precise calculations.

5. Corrigenda.

Following upon a personal inspection of the potters' stamps on Samian ware preserved in the National Museum, Professor Atkinson has been good enough to draw my attention to a somewhat serious mistake in the paper which I published six years ago in the *Proceedings*.[1] The stamp concerned is No. 169 in my list. It is outside, on the zone beneath the decoration, and is in cursive script. The surface is so badly rubbed that in the Report on Camelon (where the fragment was found) Dr Anderson prudently refrained from offering any suggestion as to the reading. So anxious was I to have the list complete that I rashly ventured upon **SILVIO**. Professor Atkinson points out that it is really **PAVLLI** retrograde, kindly confirming the correction by sending a photograph of a much better preserved example.

My first mistake has entailed a second. It will be remembered that, not having made any special study of Samian ware myself, I adopted the simple expedient of borrowing from Dr Felix Oswald's invaluable *Index* the note as to the "floruit" of each potter and the locality or localities in which he worked. I accordingly attributed No. 169 to

[1] Vol. lxv. (1930–31) pp. 433 ff.

Silvius of Lezoux, a potter of the Flavian period. This Paullus, however —there was another—worked at Lezoux and Labié from the reign of Hadrian into the Antonine period. Had I taken the precaution of re-examining each fragment when I added my note, I should probably have avoided my original blunder. The decoration is so obviously late that not even an ignoramus could have pronounced it Flavian, and I should have seen that there was something amiss. The change from Flavian to Antonine necessitates an alteration in the comparative statistics which I gave at the end of my paper, and it will be well to take the opportunity of bringing these up to date in other respects.

Since I wrote, a fragment with the stamp of the Flavian potter **MACCIVS** has been picked up at Newstead, and I have ascertained that the examples of Cinnamus at Bar Hill were only 3 in number, not 4. Further, there are certain amendments which those who have given particular attention to the matter would like to see made in the dating. Thus, they would prefer to regard as "late" Cadgatis (No. 28), Libertus of Lezoux (No. 82), and Secundinus of Lezoux (No. 131), all of whom Dr Oswald had reckoned as "early." *Per contra* they would transfer from the "late" class to the "early" Coccilus of Lezoux (No. 43), Gatus (No. 69), Jullinus of Lezoux (No. 80), and the first two stamps with the name of Quintus (No. 117), while Vironius (No. 155), who was represented by two sherds at Camelon and for whom Dr Oswald proposed no date, they believe to be "early" also.

As Gatus figures only at Cramond, the change in his date does not affect my comparisons. For the rest, the following modifications are required: (1) The total number of pieces from the Antonine Wall is reduced from 85 to 84, of which only 7, instead of 10, can be looked upon as "early," an alteration which emphasises the contrast to which I drew attention. (2) The total from Newstead is raised by 1 to 140, of which 94 are "late" and 46 "early," as against the 96 and 43 of my former calculation. (3) The addition of the two sherds of Vironius brings the Camelon total up to 80, of which 44 are "late" and 36 "early," as against the previous 43 and 35. These modifications do not seem to me to make it any easier to acquiesce in the view that, while the second occupation was prolonged for nearly half a century, the first ended abruptly after about a dozen years.

II.

CROSSES FROM THE RHINNS OF GALLOWAY.

By Rev. R. S. G. ANDERSON, B.D., F.S.A.Scot.

Some months ago a friend told me of a carved stone which he had seen in a cart-shed on the farm of Ringuinea, immediately to the south of the well-known Kirkmadrine. On enquiry the farmer, Mr Nay, said that he had found the stone in a dyke near the cot-houses, and had brought it home in the hope, some day, of finding an explanation of

Fig. 1. Kirkmadrine Slab (face).

the marks. It seems to be a long-lost companion of the famous Chi-Rho crosses (fig. 1).

The rough slab is a slice of greywacke, split off an ice-scored rock or boulder, the upper half of the drill-hole still showing a little to the left of the foot of the central figure. Evidently the separation had taken place prior to the carving, as the design has been modified to fit the space. Owing to the hardness and toughness of the stone the various figures have been well preserved and are wonderfully sharp considering the shallowness of the lines—less than an eighth of an inch. The stone is 18 inches long, 13 inches broad, 7 inches thick at the greatest depth of the face, declining to 2 inches at the rear. There are sculpturings both on the narrow face and on the sloping top. The design on the face consists of a composite cross in an oval, $5\frac{1}{2}$ inches long, $2\frac{7}{8}$ inches broad at the greatest diameter; whilst outside, a little to the left,

there is a crosslet of Latin form in a rectangle, and another to the right under the angle of two lines meeting, probably the two sides of a square not completed for lack of room. Much of the work has been by pecking, the rest with the knife. The initials J O and H E are modern.

The central cross has the Christian monogram like its three neighbours, but with a different combination—I X T. The Rho which the others have is gone; a sign perhaps of the later date of this cross, for the Rho was the first of the letters to fall into disuse. Another change is made, with the same significance, by the oval taking the place of the circle. The Iota and the Tau have been combined, intentionally or not, to form a cross of the long-shafted type.

The sculptor has used his artistic gifts to emphasise the various elements of the monogram by distinctive treatment; but unfortunately he has not completed his work, and some details are uncertain. The Iota has long, fan-shaped terminals, scratched out with a knife. One and a half inches from the top of the oval, the upper serif starts from the transverse of the Tau, expanding slightly to a half-inch from the top, when it suddenly widens out to a semicircle one inch wide at the line. The upper arms of the Chi are much worn, but they seem to consist of incised lines enclosing a narrow stem, leading up to a semicircular hollow terminal. Their form is suggestive of affinity with those on some of the Lindisfarne and Hartlepool stones, though the execution is much ruder. The lower arms are unfinished, but are meant to be similar to the upper, even to the hollow semicircular terminal. A plasticene impression of the upper right-hand terminal shows a triangle at the bottom. The lower right-hand terminal is evidently a half-made semicircle, and not a different type. It is clear that all the terminals were meant to be alike. The Tau cross has been left plain, unornamented; but the lines are cut a little more deeply and strongly than the others.

About A.D. 600 a form of cross was becoming popular in which the outward curve of the bifurcated serif, such as we see in the early Galloway crosses, was being extended down to the intersecting arm, leading ultimately to the cross formed by the arcs of circles.[1] It would seem that our Kirkmadrine cross, with its long fan-shaped serifs reaching to the transverse of the Tau cross, must have been carved at a later period than A.D. 600.

In A.D. 660 King Oswiu conquered the South of Scotland, and Dumfries and Galloway became part of Northumbria. "Some time after," we are told, "English settlers began to inhabit Galloway. Before Bede finished his *Ecclesiastical History* (A.D. 731) there were so many of

[1] Baldwin Brown, *Proc. Soc. Ant. Scot.*, vol. liii. p. 224.

them that they required a bishop of their own race, and Pecthelm was appointed to the see." [1] The arrival of these settlers, with novel customs and ideas, with different arts and training, must have had a quite noticeable effect on the cultural life of Galloway. So the reorganisation of the church in Whithorn, with the powers behind it, must have given a great stimulus to progress in many ways, and one of these was certainly the fine arts. The stone monuments in Whithorn, and their influence throughout this northern region in the ninth and tenth centuries, manifest this. But there is no sign of the new Anglian manner in our Kirkmadrine stone. Though the sculptor has kept his mind open to the changes of the ages, he has not forsaken the old. We can see this by comparing his Tau cross with that on the headstone of Carausius in Wales.[2] His cross is still the Christian monogram.

There is one point on which something more should be said, viz. the semicircular terminal. The expansion at the centre and semicircle as a termination is of Teutonic origin, and had a great vogue on the Continent in very early years.[3] At both Hartlepool and Clonmacnois there are gravestones with such ornaments. The earliest of these stones at Clonmacnois that can be dated belongs to the close of the ninth century. Baldwin Brown, in a paper read to this Society in 1919, shows, almost conclusively, that the Hartlepool stones antedated those at Clonmacnois by over two centuries, and that Ireland had learned the type from England. He also showed that these forms had been known in England, as used in metalwork, from the fourth century. W. G. Collingwood, writing of the Hartlepool crosses, states that the earliest, from the lettering, might be regarded as pre-Danish.[4] There seems good reason to believe that the knowledge of such forms was widely spread by the seventh and eighth centuries, and craftsmen would be free to use the ideas as they pleased. The arms and shaft on that earliest Hartlepool slab are just the outline of the arm of the Chi on that at Kirkmadrine. It might quite possibly be that the Kirkmadrine sculptor got his idea from a Northumbrian source. This would be quite in keeping with the date which I had deduced from other characteristics of the stone—that it was wrought some time in the seventh century or early in the eighth.

The crosslets on each side of the oval stand a little above the level of its foot; the one on the left a little higher than that on the right. The former is in a rectangle, and measures $1\frac{1}{4}$ inch in length; the latter

[1] W. G. Collingwood, *Northumbrian Crosses*, p. 2.
[2] Baldwin Brown, *Proc. Soc. Ant. Scot.*, vol. liii. p. 222.
[3] *Ibid.*, p. 215.
[4] W. G. Collingwood, *Northumbrian Crosses*, p. 12.

is $1\frac{1}{2}$ inch long, though at some time it has been continued to the angle of the two containing lines. Neither has the triangular terminals, but the lines may taper slightly in nail fashion. The three figures may represent the three crosses on Calvary.

On the sloping top of the slab there is a Latin cross, 9 inches long, and 5 inches across the arm (fig. 2). It is sunk half an inch in the stone, which has been gouged out with a narrow chisel, leaving the sides almost vertical. The work has been roughly done, and has been left unfinished, as shown by the right arm being half an inch short of the end of the tracing line which is still clearly cut. The shaft is about an inch in breadth, and ends, as does also the left arm, in a triangular terminal, with a base of $1\frac{1}{2}$ inch. At the intersection, the lower corners have been rounded. The shaft above the transverse is 2 inches in length, and on the right is slightly broken away, but the left side shows that it has expanded considerably to be almost funnel-shaped. An unusual feature is that the top of the cross has been carried to the edge of the stone and left open. This is clearly intentional, for the foot of the cross is $2\frac{1}{2}$ inches above the lower edge of the stone. Other examples of this type are on record. At Cladh Bhile, in Knapdale, the "patriarchal" cross has been cut on two stones with the same expanded or funnel-shaped top open on the edge of the stone.[1] So at Lag ny Keeillee, I.O.M., there is a slab with a Latin cross, "slightly expanding towards the ends, which appear to have been rounded or bulbous, and which has the shaft opening at the top on the upper edge of the stone, and also the right arm opening on the right edge."[2] The two crosses at Kirkmadrine are not likely to be contemporary. When the Latin cross is in its natural position, the oval cross is hidden on the base; when the oval is in position, the former has its foot in the air. Also, the face with the oval looks as if it had stood for a considerable time on the earth, being roughened and whitened by a slight encrustation, whilst the face with the Latin cross is quite clear. The probabilities

Fig. 2. Kirkmadrine Slab (top).

[1] *Proc. Soc. Ant. Scot.*, vol. xii. pl. 3, No. 5*b*; pl. 4, No. 9.
[2] *Ibid.*, vol. xlvi. p. 58, fig. 4.

seem in favour of the Latin cross being considerably later than the other. Such open-armed crosses may have been moulds.

We have suggested that the design of the three crosses, in which the largest overtops the other two, may be a symbol of the three crosses on Calvary. Whether or no this be correct, it is certain that the design was a favourite in Wigtownshire. We have three so designed at Kirkmadrine and one at Whithorn. The first we have already noticed. The second example at Kirkmadrine is an Anglian cross-slab with three crosses in relief, belonging to the late ninth century [1] (fig. 3, face). The

Fig. 3. Kirkmadrine Slab (face and back).

upper half of the slab is filled with an equal-armed cross, having a lozenge at the intersection of the arms and a pellet within the lozenge. The arms contain interlacing which is connected round the lozenge in the centre. Unattached cone-shaped lines issue from the parabolic angles of the arms. There has been a beading round the whole cross, and also a border line outside extending round the stone. Beneath this cross are the remains of other two crosses side by side, of equal size but much smaller in the head than the one above. The two have been, almost certainly, long-shafted crosses; but now they are broken away in a slanting line across the arms. What they were is suggested by the third cross, at Whithorn.[2] It is incised, but of the Anglian type also, and about the same date. The large cross here is shafted as well as the two smaller, these being placed below its arms. There seems to have been a tendency on the part of the workman to drop back into the older straight-line style.

[1] *Inventory, Wigtown*, fig. 96, No. 443.

[2] *Ibid.*, fig. 110, No. 473.

The third stone with the three crosses is at Kirkmadrine: a slab about 2 feet 10 inches long, 7 inches at greatest breadth, and over 3 inches thick (fig. 4). It is a fine black stone, taking a high polish, and has been unusually well engraved, but some vandal has cut a strip off to serve a menial purpose. The upper part contains a "Whithorn" cross considerably debased, having the upper arm a rectangle in which is a key pattern; the hollows between the arms are no longer parabolic but egg-shaped; whilst the ring and boss at the centre are decorated outside with four tiny circles, placed "at the points of the compass." The lower arm of the cross is almost wholly broken away, but underneath it are the other two crosses, one above the other, to conform to the necessities of the narrow stone. The upper of the two has a beading round it, and a pellet in the centre. The lowest cross, of similar type, has no beading, its decoration consisting of a debased spine-and-boss ornament. There has been ornament to the left of the middle cross, but the break in the stone prevents identification. This cross may be eleventh century. These four stones, practically in the same area, possessing similar figures, in similar relations to each other, suggest that there is an effort to express the same symbolic meaning, which would naturally be—the three crosses of Calvary.

Fig. 4. Kirkmadrine Slab.

Fig. 5. Inch Slab.

An exceptional feature with these small stones is found on the second of the triple-cross slabs at Kirkmadrine. The back has been carved as well as the front (fig. 3, back). In this, the true Anglian type is becoming debased: the arms are no longer equal; the upper arm is beginning to swell into the circle, with premonitions of the disc face and the future "Whithorn" type. This may not be very much, if any, later than the cross on the other face.

In the old churchyard of Inch parish in the Rhinns, there is a narrow stone slab on which is cut a somewhat unusual form of cross (fig. 5).

(Measurements of slab: 2 feet 10 inches long; 6½ inches across arms; 2 inches thick.)

It has a head of the Anglian type, but with the edges of the stone acting as the end lines of the arms, after the fashion of some of the stones from Whithorn.[1] There is a boss, with hollow ring round it, at the crossing. The shaft consists of three straight lines, the two outside lines representing the border of the cross, and the central serving for an ornament. The foot is not closed.

The open-foot cross seems to have been a favourite in one or two districts. On the slab with the three crosses at Whithorn the crosses are all of this type. The one at Kirkmadrine with a similar design had almost certainly the same feature. On the rock wall outside St Ninian's Cave, near Whithorn, in a small group of Anglian crosses, there is an equal-armed cross surmounting a shaft that seems to be open-foot. At Laggangarn, farther north in the county, there is a larger open-foot cross on a standing-stone near an ancient road now gone back to the moor.[2] Kirkcudbrightshire had another very much the same, but better cut, at Auchenshinnoch, near Dalry.[3]

Other examples of this type of cross are to be seen on the west coast. From the second century at least, Wigtownshire has had contact with Kintyre and the West. Professor W. J. Watson suggests [4] that there were settlements in Wigtownshire from Argyll in the middle of the eighth century; for in 742 Angus, son of Fergus, king of the Picts, dealt Dal Riata a "smiting" from which she did not recover for a long time, and many of the nobles would be forced to flee. By the middle of the ninth century there was a considerable body of the Galwegians, whose language before had been Welsh, who now spoke Gaelic. There is nothing very strange, then, in finding an open-foot cross in a graveyard at Knapdale in Argyll. At Cladh Bhile [5] there are two of the simple Latin, straight-lined, form; the shapes show no Anglian influence here. Still another is found at Dyce,[6] "one of the most remarkable early Christian sites in Aberdeenshire," where it is associated with other two early slabs. Of these No. 1 seems to have affinities with the cross of Tutgus at Clonmacnois,[7] and No. 2 [8] may be related to a fragment there, which has a square instead of a circle. There is a shaped slab, of late

[1] *Proc. Soc. Ant. Scot.*, vol. lvii. p. 17.
[2] Allen, *Christian Symbolism*, p. 190; *Inventory, Wigtown*, fig. 67, No. 282.
[3] *Proc. Soc. Ant. Scot.*, vol. xlvi. p. 262.
[4] Prof. W. J. Watson, *Celtic Place-Names*, pp. 171–2, 180.
[5] *Proc. Soc. Ant. Scot.*, vol. xii. pl. 6*b* and 8.
[6] *Ibid.*, vol. xlv. p. 335.
[7] Petrie, *Christian Inscriptions*, No. 16.
[8] Macalister, *Memorial Stones of Clonmacnois*, No. 198.

date, at Birse, Aberdeenshire,[1] with a sword and two open-foot crosses carved on it, showing the persistence of the type, probably from some special reason in this instance. It is noticeable that it has the Anglian head, and has probably derived from the Whithorn direction rather than from Argyllshire.

Specific variations in the form, beside the two mentioned, are also known. Such is found at Ford, Loch Awe,[2] where a seemingly Greek cross has all the limbs left open. In the Isle of Man, at Lag ny Keeillee, there is one with a shaft expanding from a narrow head to a wide open-foot.[3] Over a well at Kilmory Oib, Argyll,[4] there is a peculiar, long-shafted cross, with a short triangular terminal at the head, and the ends of the feet turned outwards at right angles. Other straight lines a little above on the shaft, and others on the arm, mark it out as having a meaning peculiar to itself.

At Cladh Bhile there is a cross that shows not only a change but a development.[5] On one of the slabs with an open-foot cross already mentioned, the other side has quite a changed form of the cross. It is of the Latin shape, and is ornamented with an equal-armed cross at the intersection and a pellet under each arm. A more noticeable change, however, is that at the shaft terminals the lines are curved outwards and upwards, almost to a circle. You find something of the same development at Kirkmadrine, where there is a cross[6] with plain straight-lined head, ornamented with a boss and ring at the intersection, with curved lines below the arms and three straight lines shutting off the head from the shaft of the pillar below. In this cross we find the shaft terminals curved round inwards and then turned up for a short distance. The likeness between these two crosses is too great for it to be a mere chance coincidence. There seems to me little doubt that the last features are simply shorthand for the spiral. At Clonmacnois you find the same general idea, but with the Celtic head instead of the Latin, and the full spiral, turned inwards, at the foot.[7] On several other crosses the spiral is shown with less than the full circle.

The head of the Kirkmadrine cross has the arms extending to the edge of the stone, with the same mannerism as those on the Inch cross, using the edge of the stone as the end line. They evidently belong to the same period, but the Kirkmadrine possibly at a slightly earlier stage. The Celtic crosses at Clonmacnois are dated as ninth century;[8] and No. 98,[9] which bears the closest resemblance to the cross at

[1] *Proc. Soc. Ant. Scot.*, vol. xlvi, p. 365.
[2] *Ibid.*, vol. xiv. p. 346.
[3] *Ibid.*, vol. xlvi. p. 63.
[4] *Ibid.*, vol. xxxviii. p. 136.
[5] *Ibid.*, vol. xii. pl. 4, 6*a*.
[6] *Inventory, Wigtown*, No. 442, fig. 95.
[7] Macalister, *Memorial Stones of Clonmacnois*, No. 98.
[8] *Ibid.*, p. 107.
[9] *Ibid.*, p. 20, fig. 98.

Kirkmadrine, is the simplest and probably the earliest in this design. So that we may be safe in dating the Inch and Kirkmadrine crosses to the late ninth or early tenth century.

The last cross to note is a cross fitchée found on the farm of Glaik,

Fig. 6. Glaik Slab.

about five miles west of Stranraer (fig. 6). It was found some years ago at the bottom of a drain, and is now preserved at the House of Knock. The stone measures 3 feet 2 inches in length, and 11 inches broad at the top, with the cross 18 inches in length, and the arms 8 inches over-all. The cross has the Anglian head with the expanding arms, with a boss and circle at the junction; and an oval shaft terminating in the triangular

foot, which is marked off by a transverse line, almost 3 inches from the point. The triangle is ornamented with two small hollows or cups. In this cross we have a great resemblance to that of Inch; the Inch cross head differing from that of Glaik simply in having the stone edge forming the end lines of the fans. The shaft of the Inch cross is straight-lined, while that of Glaik is oval, but both have the ornamental central line. The chief difference between the two is the foot: Inch cross having the open foot, while Glaik is a cross fitchée. Evidently both belong to the same period.

III.

NOTES ON (A) A NEW DISCOVERY ON THE LINE OF THE SO-CALLED CATRAIL AT TORWOODLEE, GALASHIELS; (B) AN EARLY IRON AGE BLOOMERY AT LOANHEAD OF DAVIOT, ABERDEENSHIRE. By H. E. KILBRIDE-JONES, F.S.A.Scot.

(A) A New Discovery on the Line of the So-called Catrail.

The late Mr J. H. Craw published a searching analysis [1] of the available evidence which had given rise to the common conception of the Catrail as being that of a great trench with a bank on either side, which extended from Peel Fell at the west end of the Cheviots to a little beyond the fort and broch at Torwoodlee. A personal investigation of the country supposedly traversed by this earthwork led him to conclude that this common conception of the Catrail was quite unjustified, and that in reality it was capable of being divided into five distinct parts, each part having little relationship to the other. His arguments are set forth in the paper cited above. Here, in this short note, it is our intention to deal in some detail with a small part of Mr Craw's section E, which is said to extend from Mossilee, near Galashiels, round by the fort at Torwoodlee, and then down to the Gala Water, making up a total length for this section of roughly three miles.

Our immediate interest is in that part of the earthwork which is said to circle round three sides of the fort and broch at Torwoodlee (see map, fig. 1). Our aim, during personal investigations on the site, was to discover whether or not the earthwork really did take the course

[1] *Proc. Soc. Ant. Scot.*, vol. lviii. p. 40.

claimed for it, and the result of these investigations proved that it did not.

On the north-west side of the fort the existing earthwork is very well

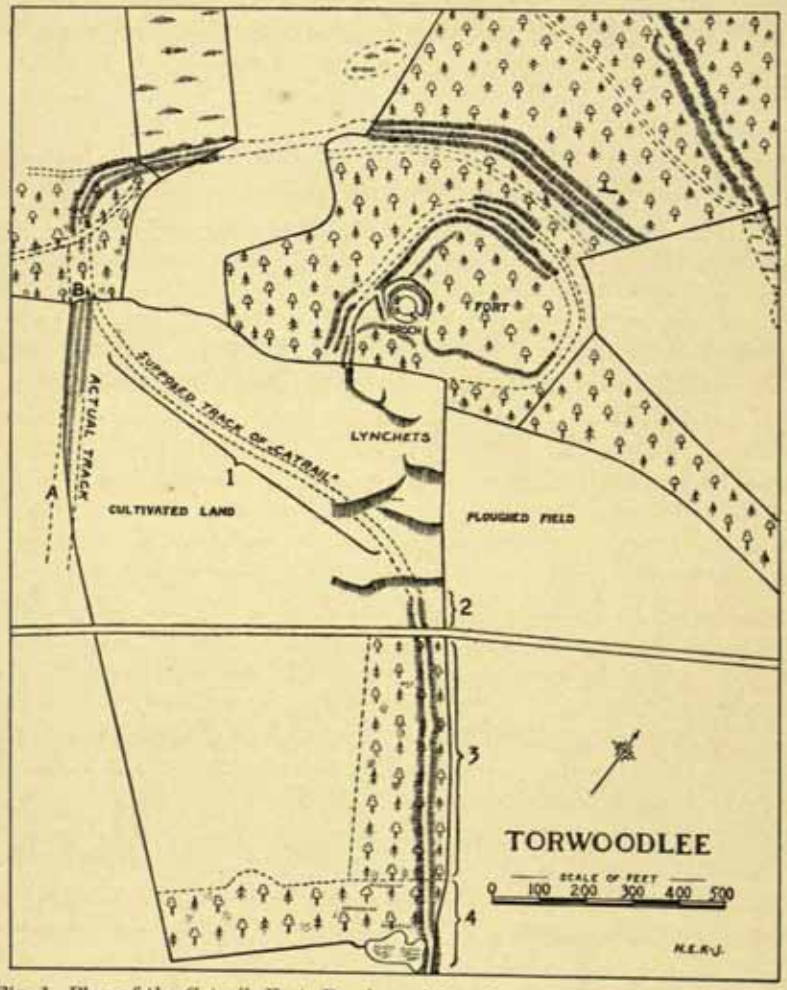


Fig. 1. Plan of the Catrail, Fort, Broch, and Lynchets at Torwoodlee, Galashiels.

defined, especially within the wooded areas; and even in the intervening meadow, where cultivation must have been responsible for its partial destruction, it can be easily followed on the ground. After proceeding in a south-westerly direction for a distance of about 850 feet it swings sharply round to the left, and then follows a south-south-easterly course

for a further 80 feet, when suddenly it ends abruptly. It is quite obvious that this ending was not intentional here, and that wanton destruction, perhaps at the time of the making of the cart-track which crosses it at this point, has alone accounted for its obliteration. This abrupt termination is the real cause of all the past speculation concerning the earthwork's subsequent course, when endeavours have been made to link up the existing section with sundry other banks elsewhere. A general concensus of opinions has caused it to be linked up with what has been described as a black dyke in a wood to the south-east of the fort, and the track which it is supposed to have followed, and which is taken off the 25-inch Ordnance Survey Map, is indicated on our plan of the site (fig. 1).

For the purpose of the present examination of the site at Torwoodlee it was found convenient to subdivide this section of the track into four parts, labelled 1, 2, 3, and 4 respectively.

1. Between the west and east corners of the cultivated land no trace of the track could be made out. After the survey had been made of the lynchets during the spring of 1932[1] it at once became apparent that, if the earthwork had really followed the course claimed for it, it would have cut through two exceptionally prominent lynchets. This conclusion, of course, was based on the assumption that the earthwork would probably have post-dated the lynchets, which seemed to us to have been tilled by the occupants of both the fort and the broch. It may be considered unlikely that the so-called Catrail would have ante-dated even the broch, which, as we know, was occupied during the period of Roman domination in the Lowlands. The complete absence of any indication of any other earthwork, apart from the lynchets themselves, on what is almost undisturbed ground is therefore a powerful argument against the track having continued in the direction claimed for it here.

2. It will be noted from the plan that this part takes definite form as a plain bank without an associated ditch. It was easily ascertained that this part was in reality nothing more than an overgrown heap of field stones, collected from the fields on either side and tipped here to be out of the way.

3. This part extends for more than three-quarters of the length of a wood, the trees of which are roughly of the same age as those on top of the hill. Within this wood, and extending from the north-west end to the south-east end, are several rigs and mids, representing the remains of late mediæval cultivations in this area. As might be expected, at the base of the slope, at the south-east ends of the rigs, are the remains of

[1] *Proc. Soc. Ant. Scot.*, vol. lxvii. p. 74.

a cross-ditch to carry off the water collected by the mids. Most of the rigs are of an even size; but it appears that one of them has been seized upon and defined as the continuation of the Catrail, merely because its top end happens to be opposite the heap of stones lying on the other side of the road, and which we considered in (2). There seems to be no other justification for choosing this particular rig in preference to any one of the other rigs in the wood. Here again, as we see, no associated ditch has been claimed for this part, so that we may say that the track, or indeed any form of black dyke, does not exist here.

4. The marshy nature of the ground here explains why it was necessary to drain the area now covered by the wood before the land could be cultivated. There appears to be no trace of either dyke or ditch here.

Our denial of the existence of any trace of the so-called Catrail in parts 1, 2, 3, and 4 of the Torwoodlee section has left us with the problem of suggesting an alternative direction for the course which the earthwork must have taken after it ended abruptly near the cart-track. Fortunately, more by accident than by design, we stumbled across the alternative on our way up the hillside in order to inspect the earthwork on the west side of the fort. Anyone who is acquainted with the conservative nature of dyke-builders must know that it is hardly possible for any dry-stone dyke to be adjusted for height according to the nature of the ground upon which its foundations have been laid; so that the level of the top course of the dyke-stones may be said always to follow the various undulations in the surface of the hillside upon which the dyke has been built. At A (fig. 1) a significant hump was noted in the dyke which ascends the hillside here; whilst in the cross-dyke near the top of the hill a significant dip, B, was also noted. By standing at B and looking towards A, distinct traces of the almost obliterated remains of a ditch, with the suggestion of a bank on either side of it, were clearly made out. The general effect was enhanced by a healthy growth of vegetation. Midway from B to A the left-hand bank fades out, but remains of the right-hand bank and of the ditch are quite pronounced all the rest of the way to A; but beyond A all trace of the earthwork is lost.

Anyone can ascertain these facts for himself if he will but go to the site during the spring; and we feel that this newly discovered portion may be safely considered to be the real continuation of the so-called Catrail. It is, as we see, adopting a southerly course; but although we searched diligently for further remains in the field into which it disappears, and also in the meadow on the south side of the road, nothing further was observable. But perhaps an observer from the air could pick up the track.

As a result of the above discovery a new problem now arises: Did this earthwork, the so-called Catrail, extend as far as Mossilee, or did it take another direction? The obliteration consequent on the extensive cultivation of the fields here has not only deprived us of the chance of giving an immediate answer to that question, but it has also deprived us of the opportunity of substantiating our theory to the effect that the earthwork post-dates the lynchets: for, with the faint traces of the latter which still remain in the fields in this region, it is obvious that the so-called Catrail must have crossed them and at right angles to them.

(B) Early Iron Age Bloomery at Loanhead of Daviot, Aberdeenshire.

In the account of the excavation of the stone circle at Loanhead of Daviot reference was made [1] to the discovery of no less than fourteen sherds of typical early Iron Age ware in a disturbance near the middle of a saucer-like depression situated to the west of, and at about 50 feet from, the stone circle. The soil here also seemed to be of an unnaturally dark colour. After consulting the Inspector of Ancient Monuments, H.M. Office of Works, it was agreed that the site, which is just within the area now under the guardianship of the Commissioners of H.M. Works, should be excavated. It was not until the second season's work was drawing to a close that there was found an opportunity of excavating the entire depression, when, as a result of that excavation, the present bloomery was brought to light.

The bloomery was exceptionally large, and it lay under about 20 inches of loosely packed loam. It was 22 feet in greatest length and 13 feet 6 inches in greatest width. The total area covered by the bloomery is represented on the plan (fig. 2) by the dotted outline, and the extent of this area was easily determinable owing to the bright-red nature of the soil. Examination revealed that this red soil, particularly near the group of stones labelled A, was as much as 6 inches thick, but the depth decreased towards the north end, where it was but 3 inches. At about a third of the distance from the north to the south end was a slight outcropping of soft rock, which, in spite of the fact that it lay under soil over 3 inches deep, had also been burnt a deep red. It will thus be apparent that the heat generated on the site must have been exceedingly intense.

Unfortunately there are no stones remaining which can be resolved

[1] *Proc. Soc. Ant. Scot.*, vol. lxix. p. 170.

into a definite structure. All the stones which are marked on the plan were *in situ*, and they were well embedded in the soil, so that in most cases their upper surfaces were almost level with the surface of the surrounding red earth. The stones of group A appear to have been the most carefully placed; and scattered in between and upon them were numerous pieces, large and small, of iron slag, together with a quantity of charcoal. Nothing, however, could be made of these stones, and the same may be said of groups B and C. The only point worthy

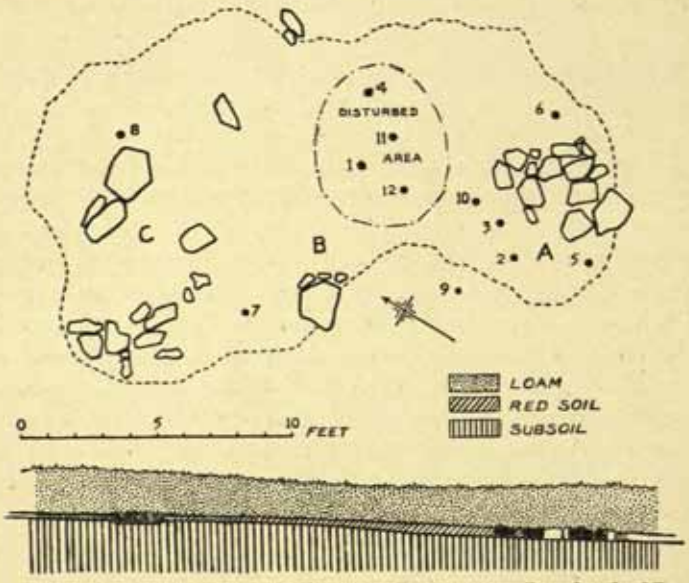


Fig. 2. Plan and Section of Early Iron Age Bloomery at Loanhead of Daviot.

of additional mention in connection with group A is the occurrence of a rough trough, with its opening to the west, in the middle of the setting. It was full of small fragments of charcoal mixed with a quantity of black earth. Generally speaking, charcoal was scattered in greater quantity about the stones of group A than was the case elsewhere within the area covered by the bloomery; and it is interesting to note that most of the pottery recovered during the work of excavation also came from round about group A.

From the scattered nature of the remains of the bloomery it would seem that it must have suffered destruction at a time not long subsequent to the period when it fell into disuse. The only further remark that need be added here, in view of the absence of structure, is that this bloomery must have served to provide the inhabitants of an early Iron

Age village with their tools and weapons; it was, in fact, the local smithy. Since during the same period of the Iron Age (as we shall see from a study of the pottery) the Centre Pit of the stone circle became the communal kitchen,[1] the site of the village cannot be far distant. Unfortunately there are no surface indications anywhere on the hillside to betray its presence.

Pottery.

Most of the pottery recovered came from fairly near the surface of the red soil; but some of it looked as though it had been trampled upon, and it had subsequently got covered by about an inch of red soil. It is curious that so much purely domestic ware should have been found on the site; but the same conditions obtained at the bloomery at Wiltrow, Shetland,[2] where domestic pottery appears to have been mixed up with the iron slag, whilst other sherds were found adjacent to the furnaces.

The pottery recovered from the bloomery at Loanhead of Daviot was of precisely the same nature as the early Iron Age domestic ware recovered from the Centre Pit of the stone circle, which was described in the first report.[3] That being so, a detailed analysis is not called for here. Of the rims, No. 1 is the earliest: it is of thick, coarse ware, containing fairly large grit, but quite well baked; Type 1, Period 1 of the local Iron Age.[4] Rim No. 2 was of moderately thick ware, blackish-buff exterior, black encrusted interior, paste mixed with moderate-sized grit; Type 2, Period 2. Rim No. 3 was of similar ware to No. 2, but it had been slightly slipped; Type 2, Period 2. Rim No. 4 is unique so far: it can best be compared with No. 9 of Type 3 (fig. 12 in the first report): moderately thin ware containing small grit, fairly hard; Type 3, Period 2. Rim No. 5 is of Type 4, Period 2, but it is slightly coarser than the pottery typical of that period: light reddish-buff exterior, blackened, buff interior, not very well baked. Rim No. 6 is of moderately-thin ware containing fine grit, black exterior, reddish-black interior, slipped on both faces; Type 5, Period 3. Rims Nos. 7, 8, 9, and 10 are of similar ware; the first three are representative of later phases in Period 3 than is the case with No. 6, whilst No. 10 is the latest form of rim recovered from the site; all are of Type 5. The two bases, Nos. 11 and 12, both being of thick reddish-buff, though well-baked ware, are undoubtedly early. No. 11 can best be compared with the base of the pot found in the Centre Pit of the stone circle (fig. 10, No. 1, in first

[1] *Proc. Soc. Ant. Scot.*, vol. lxix. p. 178.
[2] *Ibid.*, vol. lxx. p. 155 [3] *Ibid.*, vol. lxix. pp. 197–213.
[4] We use here the same type and period numbers which were adopted for the pottery described in the first report.

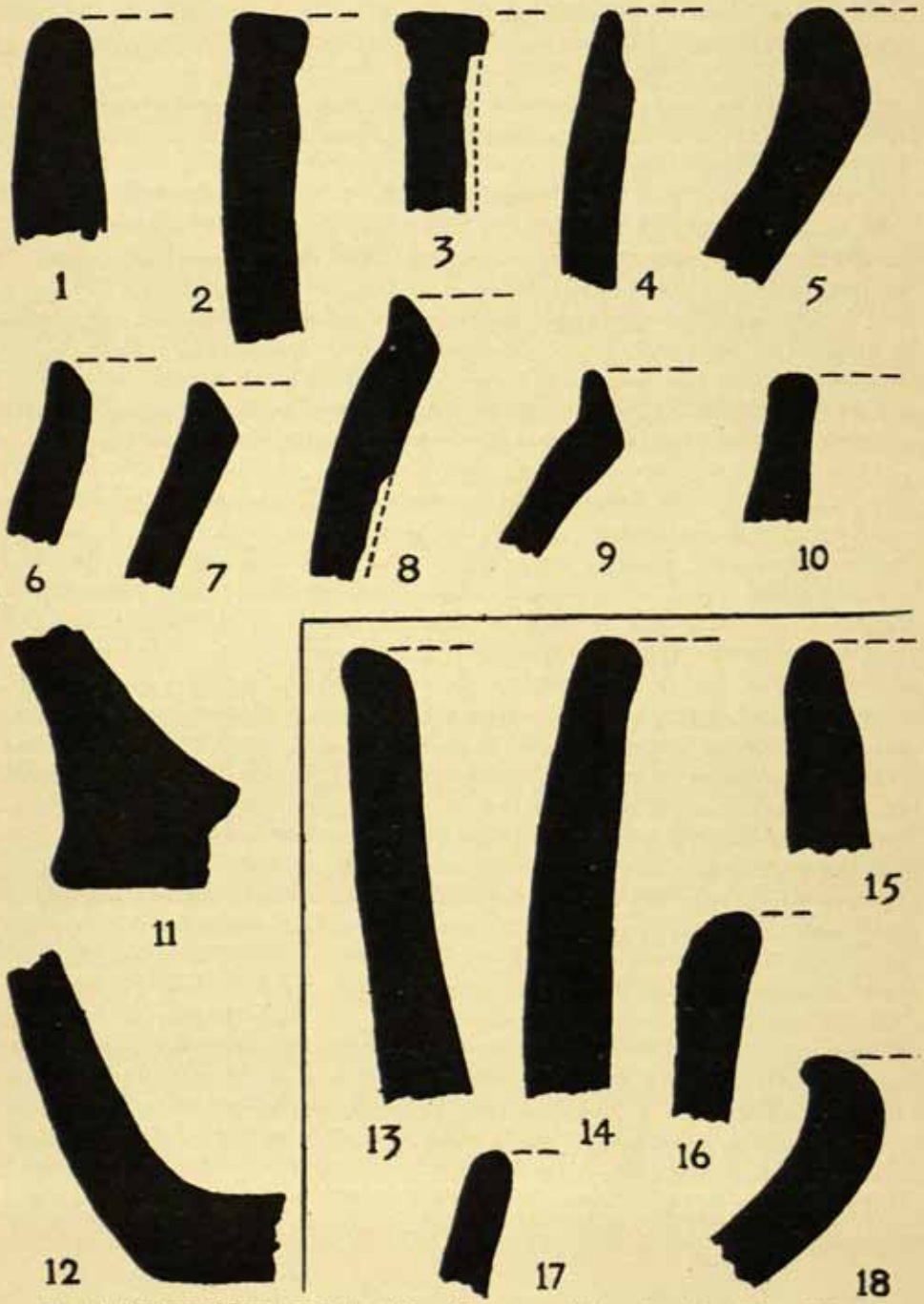


Fig. 3. Sections of Iron Age Pottery from Bloomery and from Secondary Floor of Cemetery at Loanhead of Daviot.

report), and it would therefore belong to a vessel of Type 2, Period 2. Base No. 12 must have belonged to a globular pot; possibly the rim would have been of a similar nature to No. 5.

When we review the above evidence we find that most of the pottery is representative of Periods 2 and 3 of the local Iron Age. There is only one rim of Period 1 and none at all of Period 4. This, doubtless, is a true indication of the period during which iron was being smelted on the site, and it shows that at about the time of the Roman invasion of southern Scotland the local Iron Age population had considerably dwindled in numbers. It will be recalled that the pottery from the Centre Pit of the stone circle revealed the same story: there were but four rims of Period 4, one of which belonged to a vessel which seemed to have been a native copy of a Roman pot. Probably by this time not more than a family or two were resident at Loanhead, and therefore there would naturally have been an insufficient demand for tools and weapons to keep the bloomery in operation. It may have been for purely economic reasons that the Iron Age folk moved elsewhere; but perhaps the most likely explanation would have been the increasingly unsettled conditions then prevailing—wars and rumours of wars—that caused these people, who were doubtless the descendants of a population continuously resident in the neighbourhood since early Bronze Age times, to flee to better defended sites.

On p. 290 of the account of the second season's excavations at Loanhead of Daviot reference was made to some sherds of early Iron Age ware which were found upon the secondary floor on the site of the late Bronze Age cemetery. All the rims are illustrated here (fig. 3, Nos. 13–18). Nos. 13, 14, and 15 are of Type 1, Period 1, and are of a coarse ware containing medium or large-sized grit, and not very well baked. No. 16 is a rim of red ware with a black matrix. It contains small-sized grit, is well baked, and is slipped on the interior surface, being smooth to the touch. With this rim, and with that of No. 18, which is of a blackish-brown ware containing fine grit, well baked, slipped on both surfaces, and having the outer surface burnished, we have two new additions to our Period 4. It is difficult to assign a type-number to No. 16 without creating a new type, but No. 18 seems to be related to Type 6. Rim No. 17, however, is distinctly related to Type 6, Period 4, being of a light-red, thin, and hard ware containing fine grit, and being slipped and smoothed on both surfaces. It would, however, be a little earlier than No. 1 of Type 6 figured in fig. 14 in the first report.[1]

[1] *Proc. Soc. Ant. Scot.*, vol. lxix. p. 207.

IV.

ETRUSCAN GOLD JEWELLERY IN THE NATIONAL MUSEUM OF ANTIQUITIES OF SCOTLAND. By Miss MARY A. JOHNSTONE, B.Sc., F.L.S.

The Etruscan gold ornaments in this museum are illustrative, in form and in decorative technique, of the work of the Etruscan goldsmith in the sixth and fifth centuries B.C.

Sufficient material has been found to constitute a series of the types of ear-ring fashionable in Etruria in successive centuries.

The characteristic form (*a baule*) of the sixth century—not very like an ear-ring—was a cylindrical box having a transverse slit left in the side, this crossed by a suspension wire, which in turn was concealed from front view by an upstanding, hinged plate of gold. The whole was sometimes lined with sheet gold.

In the fifth century, fashion changed to a more ring-like form (*ad anello*). The "ring" was varied with much taste and ingenuity, very often broken at one point to introduce ornament, a lion's head or a dolphin's being favourites; the closure was effected by means of a thin wire loop. Another type belonging to the century was a large disc patterned with granulation and gold wire.

In the early fourth century, one form was faced by a decorated oval plate, behind which was the ring proper. During the late fourth and the third century, ear-rings became more and more elaborate, less artistic, often garish; they might carry chains with droplets, strings, or bunches of pendants; they were often of great size. The largest and flimsiest were probably of funeral import.

The contents of seventh-century graves in Vetulonia, Cære and Præneste prove that the Etruscan goldsmith attained pre-eminence in that century—marvellous for the microscopic delicacy and accuracy of his technique and for his exquisite taste in designs, implying an inheritance of training and the possession of very fine implements, as well as a rare mastery of processes some of which have not since been re-discovered in their perfection. We see great fertility in ideas in the patterns evolved, some native Etruscan, some modified borrowings from Oriental sources.

Three methods of ornamenting a surface were in common use.

(*a*) The application of minute grains or globules of gold was practised, either to express outlines or to block in masses; this was the unique "granulation" (*a granulazione*), or, when the particles were excessively small, dust of gold (*a pulviscolo*). Very elegant examples of granulation were produced up till the last decades of the sixth century; it was still favoured in the fifth, but became less and less used and less refined in quality. This technique was not restricted to Etruria, being used throughout the Eastern Mediterranean—of excellent merit in Rhodes and in Lydia.

(*b*) The method of manipulating fine gold wire, either applied to a background of sheet gold, or as open, lace-like work, was more peculiarly Etruscan than the granulation, and may have originated in the ancestral home of the people. The seventh century produced the finest of it; in the sixth, it was still most beautiful, and often used in conjunction with granulation. It was neglected in the late fifth and the fourth, revived in coarsely inferior fashion in the third. It was the forerunner of the filigree which became the vogue in Genoa in Renaissance times.

(*c*) Very good repoussé work, charming in detail and of astonishing exactitude in microscopic detail, was associated with the other two forms of decoration in the seventh and sixth centuries—making for great variety of treatment. There is found an infinity of subjects stamped on sheet gold, and quaint miniatures of animals (*e.g.* ducks and lions) fashioned in the round, their beauty revealed in its perfection only under magnification.

The ear-rings and pendant preserved in this museum illustrate very well all three of these types of the Etruscan goldsmith's art (fig. 1).

Pair of Gold Ear-rings.

Nos. FF 30–33. 575–475 B.C.

Found in Pompeii. From the collection of General Ramsay.

This pair of cylindrical ear-rings is rather larger than most of this type, and is characterised by the boldness of the designs and the accuracy of the execution.

The front panel (21 mm. × 20 mm.) is divided into nine compartments, which are enclosed in edgings of double-looped gold strip, the tops of the folds forming the free surface. Each one of the central and corner compartments contains a large boss resting in a cup, the rim

of which is just visible. The boss is covered with infinitely minute particles of gold. In each of the other rectangles is a floral rosette, its leaves fitting into the angles; bounded by the leaves is a dainty cup, fluted, sometimes indented at the top, a sphere at its centre, covered with the finest granulation.

The back panel is plain by contrast, being merely crossed by several bands of cable-work, with a border of tongue design in wire.

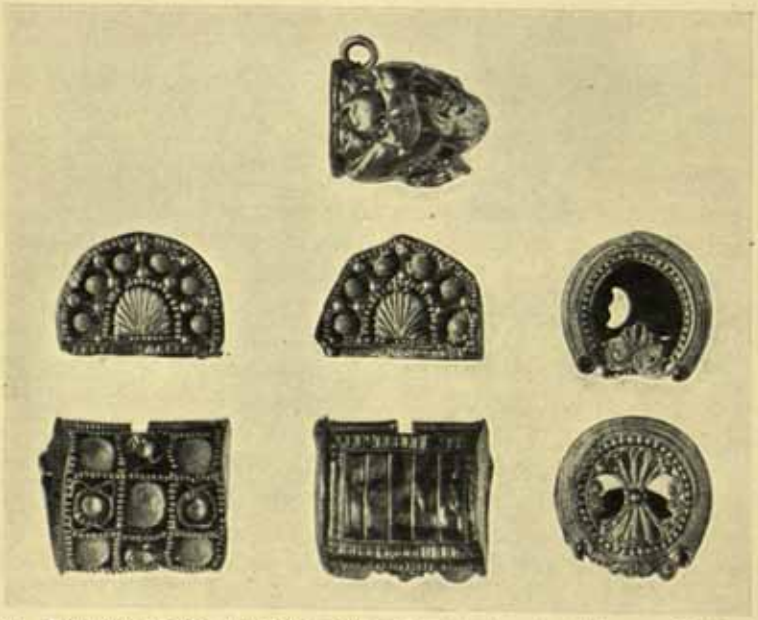


Fig. 1. Etruscan Pendant and Pair of Ear-rings, front and end views, of Gold. (i.)

Both ends are heavily ornamented with striking designs in ribbon gold, forming rows of fine cables, leaves, and volutes, combined with globules. There is no granulation.

The hinged flaps (detached, the pins missing) are semicircular in form. Edged by a plain band, the border is of the looped ribbon-work used in the front panel. Within this is a circle of beautiful, fluted cups having central bosses coated with dust-like granules—like miniature pateræ. A smaller semicircle of the pleated strip-work separates the row of cups from a fan-shaped cluster of grooved ornament. The whole scheme is very handsome.

PENDANT.

No. FF 34. Sixth to Fifth Centuries B.C.

From front to back, 21 mm.

Found in Pompeii. From the collection of General Ramsay.

This pendant, of embossed sheet gold, is in the style of the lion's head often found as part of circular ear-rings of the fifth century. At the top is fixed a double loop for suspension. It may have belonged to an ear-ring or to a necklace.

The microscopic detail of the work is extraordinarily delicate, showing not only the main features such as mane, eyes, nostrils, mouth with protruding tongue, but fine points like eyelids and eyelashes, characters of teeth, spots above the eyes, even the papillæ on the tongue!

V.

TWO CUP-MARKED STONES FROM CLAONAIG, KINTYRE.

By ANGUS GRAHAM, M.A., F.S.A.Scot.

The notes which follow refer to two cup-marked stones, not previously recorded, which have come to light not far from Claonaig Inn, in the parish of Skipness.

The first (fig. 1) lies just inside a field to the south of the public road about 120 yards west of the Inn; it appears to have been split off, by blasting, from a boulder which remains embedded in the dyke which separates the field from the road. The detached block measures 3 feet 6½ inches in greatest length, 17 inches to 2 feet 1 inch in breadth, and 16 inches in thickness. Its upper surface, which lies approximately flat, bears seven well-marked cups up to 1¾ inch in diameter by ¾ inch in depth, together with traces of at least twelve others that are too much weathered to measure or have been partially split away. It is possible that the boulder in the dyke may also bear cups on the surfaces that cannot be seen.

The second (fig. 2) is not a detached stone but an outcrop of rock, situated about 30 yards west of the small burn which bounds the field just mentioned on its western side and 100 yards below the public road.

Fig. 1. Cup-marked Stone at Claonaig, Kintyre.

Fig. 2. Cup-marked Stone at Claonaig, Kintyre.

The flat upper surface of the outcrop bears six well-marked cups measuring up to $1\frac{3}{4}$ inch in diameter by $\frac{1}{2}$ inch in depth, together with traces of six others which are too much weathered to measure. The disposition of the cups suggests that others may be hidden by the turf which covers the rest of the outcrop.

VI.

TWO NOTES ON SCOTTISH COINS. By H. J. DAKERS, M.A., F.R.N.S., St Albans.

1. The Kinghorn Mint of Alexander III.

In writing of the long-cross pennies of Henry III, which are so closely associated with the contemporary issue of Alexander III, Mr L. A. Lawrence remarks: "Another source of error is the great resemblance of some of the letters to others in the curious Gothic alphabet exhibited on the coins. An ꞃ has been mistaken for an R and both have been given the place of a Ꞃ." The same difficulty occurs at a much earlier period in connection with the ORSNAFORDA coins of Alfred. Both the writers on these coins in the *British Numismatic Journal*, Mr Carlyon Britton and Mr Anscombe, acknowledge the ease with which R and Ꞃ, and also R and ꞃ, can be and are confused, the forms R and Ꞃ especially being hardly distinguishable. The letter Ꞃ on early coins is very rare, and in Anglo-Saxon appears mainly in the word ꞂYNING (King): in the Scottish series it cannot appear on the obverse, and on the reverse the only place for it is in a mint name.

Edward Burns, in his account of the long double-cross pennies of Alexander III, describes and figures one which he reads WILꞂM·OH·ꞂIHG[1] (Pl. fig. 1). This coin, "unique and hitherto unpublished," he assigns to *Kinghorn*, thus adding a new mint to the coinage of Alexander III. The coin, however, is no longer unique: there are two specimens with this reading of the mint name in the collection of Mr R. Cyril Lockett.

Kinghorn, on the coast of Fife, a few miles from Burntisland, was a royal burgh from the twelfth century, and the King had a palace there which was afterwards for a time a dower-house for the Queens of

[1] The letter which here appears as H is the form which the letter N takes on the sterlings of Alexander III.

Scotland. It was, as is well known, while on his way from Edinburgh to join his young wife at this place that Alexander met his premature death by a fall from his horse. As a royal burgh and a royal residence, Kinghorn was most likely to have a mint, especially since there is good reason to believe that the mint-masters in many cases accompanied the king and struck where he was residing. Burns's attribution of this coin to Kinghorn has been generally accepted.

In his discussion of the mints GLA, FRES, DVH and MVH, all of which seem to have been worked by one moneyer WALTER, Burns remarks: "Recently I had the opportunity of inspecting a sterling in the collection of Mr Adam Black Richardson, formerly in the Montagu collection, reading on the reverse WALTER OH RIH or RVH—the letter R on the name of the mint being most distinctly rendered. Unless the sinker of the dies had run short of letters, as sometimes happened, and employed an R for a D or an M, we must regard this piece as representing quite a new mint, possibly Renfrew, which is mentioned in Scottish records as early as the reign of David I." Burns apparently considered this coin also to be unique. This, however, is far from being the case. There is no longer any doubt as to the reading RIH, nor is it confined to one moneyer: of the two specimens now in my son's collection, obtained from Mr Baldwin, one is by WALTER (Pl. fig. 3) and the other by WILAM (Pl. fig. 2), who struck at Edinburgh (Pl. fig. 4) and who also struck the coin which Burns reads ꞎIHG and assigns to Kinghorn, the obverse being from the same die.

Burns also presumes that the sinker of the dies was provided with a separate punch for each letter, but this does not appear to have been so at this period. In fact the multitudinous ligatures of letters which are not only joined to one another but built up with the assistance of the lines of the cross on the reverse, make it inconceivable that punches representing complete letters were provided for these coins.

On Burns's Kinghorn coin the letter which he, no doubt rightly, reads as ꞎ is by no means distinct and might, I think, quite as easily be read as R. It is strange that he did not see the close resemblance between the legend on this coin and that on the coin which he is inclined to assign to Renfrew: three-letter abbreviations of mint names are very much more usual than four-letter ones and, granting that R and ꞎ are hardly distinguishable from one another, the shorter form ꞎIH· would naturally be more common than the longer ꞎIHG, as indeed it is; and Kinghorn, as a royal burgh and king's residence, if it was a mint at all, was likely to be a mint with a considerable output, though not of course comparable in this respect to the chief commercial centres. It

would be surprising if the coin attributed by Burns to Kinghorn were indeed the only specimen from that mint to come down to us; but, if we add the ꞩIH coins to Kinghorn, we have about as many surviving specimens as we can expect from one of the minor mints of Alexander III. In this connection we may compare the Glasgow mint, of which coins, though not common, are not very rare: on these the mint name appears as G or GLĀ: I know of one or two specimens only which read GLĀS.

Burns had access to a large number of coins and in general made the fullest use of his opportunities, but hoards discovered since his time have added much to the available material, especially the great Brussels hoard of long-cross coins of Alexander III. If Burns had seen the ꞩIH coin of the moneyer WILĀM, he could hardly have missed the connection of these pieces with Kinghorn.

It is worth adding that Burns figures (fig. 126) and describes a Roxburgh sterling which he reads ĀDĀ MOꞩ ROꞩ ЄSB: the third letter of the mint name, both on Burns's coin and on another specimen, has more the appearance of an R than of ꞩ. I suspect that in this case also the letter should be read as ꞩ: The town when it is represented by more than two letters on the coins of William the Lion is generally ROCI, ROCIЄ, ROCIЄBV: in two instances where the CI does not appear the third letter is read by Burns as ꞩ, in two others as R: these coins are figured as Nos. 68, 68A, 67B, 69, and unless the legends on the coins themselves are more distinct than the illustrations suggest, I think it will be agreed that they furnish little evidence one way or the other as to the third letter of the name, which, whether it is capable of being read ꞩ or R, may still better be taken as intended for ꞩ. On Berwick sterlings Burns's reading BЄRWIꞩ (fig. 89) may possibly furnish another instance of the same confusion.

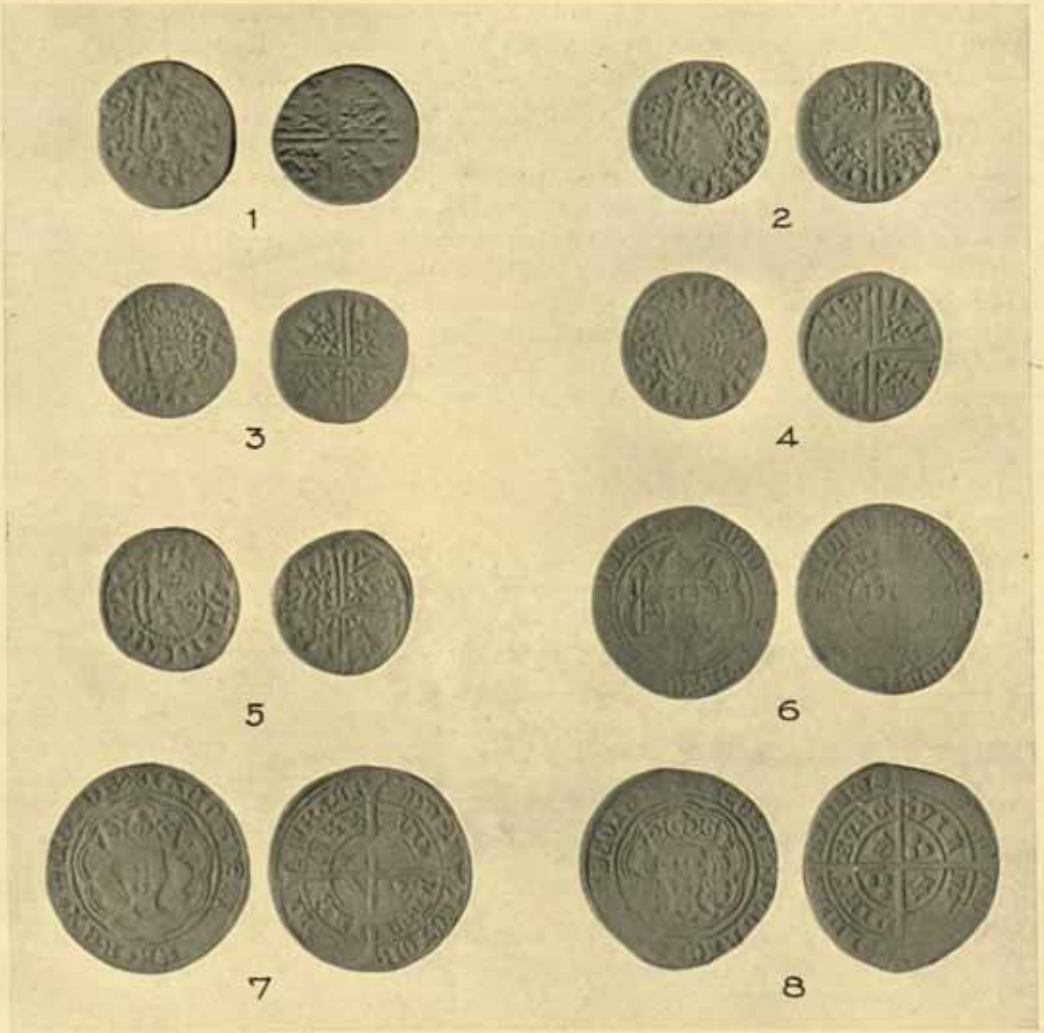
2. TRĀCIĀ FOR GRĀCIĀ ON GROATS OF JAMES I.

On groats of James I the word GRĀCIĀ appears as TRĀCIĀ (Pl. fig. 6), and this occurs not on a few coins but on the large majority of those listed by Burns. I venture to suggest an explanation of what seems at first sight a very unlikely mistake. A coin of Alexander III with reverse WĀLƫЄR OH ƫLĀ (Pl. fig. 5) gives, I think, the key to the puzzle.

The half-uncial ƫ (=T) which appears on this coin belongs to the writing of the eighth and ninth centuries but survived sporadically as, for example, on this coin and as the initial mark on the Touraine groats

of Henry VIII. The G of the same script resembled a flat-topped 3 (ʒ), but sometimes appears reversed as on the stycas of the moneyer LEOFDEƷN. It will be noted that on the Glasgow coin the same letter (ƺ) is used for the T in WALTƺR and for the G in GLA̅. Moreover, in the reign of James II the half-uncial ƺ is used for G as in ƺDINBVRƺ (Pl. fig. 7), STƺRLINƺ except in one instance described by Burns (No. 41A), but not figured, which reads PƺRƺH: on the Stirling groat ƺ also appears for G in GRA̅CIIA̅ but not in this case for T since the plain T appears on the same side of the coin in SCIOTTORVM. The use of the form ƺ for G survives on the placks and half-placks of James III of the first variety [1] (Burns, figs. 571–573). The confusion of the two letters is evident, but in what way it led to the form TRA̅CIIA̅ is not so clear, unless we conjecture that in the instructions given to the die-sinker the G was erroneously represented by the half-uncial ƺ, and that the die-sinker, supposing it to be intended for a T, substituted what was then the more usual form of the letter. It is curious that the substitution of T for G in GRA̅CIIA̅ does not occur at all on the gold coins of James I. It appears only on one of the pennies known to Burns and on two of the very few halfpennies which he attributes to James I.

[1] The form ϵ for T also appears on the legend on the Royal Seals of Alexander III and of John Baliol. On the first seal of Robert Bruce the two forms appear together; on one side SCIOTƺORVM, on the other SCIOƺTORVM; on his second seal T only is used (see *History of Scottish Seals*, W. de G. Birch).



1. Alexander III, sterling, Kinghorn, B, fig. 108,		WILAM·OH ꝟIHG.
2.	,, ,, ,,	WILAM·OH·ꝟIH.
3.	,, ,, ,,	WĀLTƐR OH ꝟIH (B, p. 147).
4.	,, ,, Edinburgh,	WILĀM OH·Ɛ·.
5.	,, ,, Glasgow,	WĀLƀƐR OH ƀLA
6. James I, groat, Edinburgh,		TRĀCIĀ.
7. James II,	,, ,,	BVRƀ.
8.	,, ,, ,,	BVR ƀ.

H. J. Dakers.

Plate VI.

[*To face p.* 414.

EXCAVATION OF TORRS CAVE, KIRKCUDBRIGHT.

By S. V. MORRIS, F.S.A.Scot.

(Read 11th January 1937)

The Site.

Torrs Cave is situated on the eastern shore of Kirkcudbright Bay, at a point where the estuary of the Dee begins to fade into the Irish Sea. Beyond it the cliffs fall to a low, rocky shore, from which a belt of country free from boulder clay stretches inland to the cairns of High Banks. Up the estuary the cliffs line the shore until Manxman's Lake is reached, while across the Bay lie Little Ross Island, Meikle Ross, and Ross Bay. The level of the 25-foot beach appears to coincide with the present storm-beach. The cave is on a level with the 25-foot beach and its origin is to be found in a combination of dyke-intrusion and faulting.

Its use by man is indicated by the name given to it—"Dirk Hatteraik's Cove"—on Ordnance maps. Association with this Scott character is denied by the people of Creetown who have appropriated Ellangowan and other names for it. There is also a tradition current that a subterranean route exists from the cave to Balmae House, a mile away, a route presumably used by some of Hatteraik's colleagues. In the *Old Statistical Account* the following note occurs (vol. xi. p. 25). There is

> . . . a remarkable cave in the precipice. From the entrance to the farthest end it measures 60 feet, but the height is unequal. It is narrow at the mouth, then gradually widens, rising to a height of 12 feet or more: again it contracts, and through the rest of the 60 feet diminishes. The door had originally been built with stones, and had a lintel, which is now fallen down, and buried under the rubbish. The cave itself is a work of nature. From its sequestered situation and difficult access amidst rocks and precipices, it appears to have been a hiding-place in ancient times. It was not improbably some Druidical cave.

The mouth of the cave, as we first saw it, was closed to within 5 feet of the roof by a mound which reached its maximum height just outside. There is no arch, but probably the aperture would have been completely closed if the mound had reached its greatest height at the entrance-passage. This mound sloped down rapidly inside the cave, became less

steep in the first chamber, and finally terminated in the second passage. There is nothing to disagree with in the note given in the *Statistical Account*. In the plan (fig. 1) the unroofed section at the entrance, where the upward slope of the cliff-face commences, is called the vestibule. Thereafter, where the roof is definite, this vestibule narrows and forms the entrance proper. Beyond this entrance the cave widens to the first chamber, of semi-oval shape, but it expands rather more to the north-west than to the south-east. Curving inwards, the north wall forms a second passage, beyond which lies the second chamber, a narrow rectangle save for the backward turn by the south wall, which thus makes a recess at the far end. This recess prevents any genuine entrance to the third chamber, though the north wall again curves inward. Débris increases in height throughout this last division and eventually obscures the back wall of the cave, but a hole above the débris indicates a continuation of at least 10 feet.

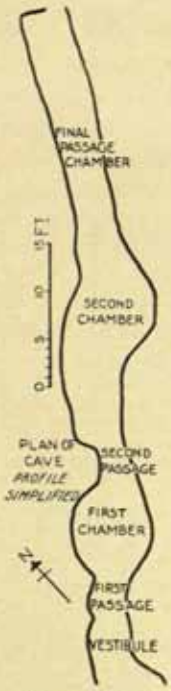


Fig. 1. Torrs Cave: Plan.

Other features of the cave's formation need not concern us, since they have no significance archæologically so far as can be seen. The earliest inscription on the wall was dated 1800. At the rear an accumulation of limestone obscured the face of the rock, but we could not distinguish any carving beneath this cover.

At a distance of 6 feet from the mouth of the cave the mound sank very rapidly. This rapid fall we discovered later to be due to the presence of a buttress and structures adjacent to the mouth.

The Excavation.

Excavation has taken three seasons. During the first season a trench was dug to a depth of 6 feet from the top of the mound at the entrance; during the second a cut was made on the level of an adjacent cliff-terrace to find the relation of our cave to the 25-foot beach; the third was spent in examining structures discovered during the second, and which stand at the level at which water collects to-day. This last was our final datum-line, but we followed the apparent level of the beach in the cave so far as excavation was concerned. In front of the cave this datum was above a fine bluish clay at first, which changed to an equally fine brownish-yellow clay as we approached the outermost

wall of the structures. Inside the cave the level was marked by fine shingle and sea-worn boulders.

Except for two walls and their packing, since replaced, and the uppermost structures, none of the building has been removed.

At the point reached in the second chamber the upper and middle occupation layers had shrunk to a depth of 9 inches, compared with a depth of 17 feet or 18 feet separating these same layers at the entrance. None of the third chamber has been touched, but it looks as though the beach-boulders protrude on the present surface. This, together with the fact that all relics ceased before we reached our present position and that lime has accumulated heavily over the last sections, caused us to finish the excavation in the second chamber.

Structures.

Upper.—Just below the surface were the remains of a wall, which may in part have collapsed, and may, therefore, represent the building recorded in the *Statistical Account*. It rose from a base in the entrance, where the earth had possibly been disturbed, to judge by the several commingling bands of charcoal. There was no trace of a lintel or doorway, though possibly some of the long stones found in the cave belonged to some such construction.

Pottery was found below the foundation-stones; hence it seems reasonable to assume that the wall (with doorway) post-dated the pottery. Apparently at the time the *Statistical Account* was compiled the structure was in decay; the pottery is a black glazed ware of the eighteenth century. Probably the wall was, therefore, of mid-eighteenth-century date.

It will be noted that the south wall of the cliff is straighter than the north wall. Two recesses must be noted. There is a smaller recess between them, but it had no significance below the highest levels. The other two are named the first and third recesses. At the very lowest levels they merge to a large extent, but on the surface of the mound there was a projection of some 3 feet between them. At the point where this projection reached out to its full extent there was a buttress running to meet it from the opposite cliff, leaving only a narrow stretch of some 6 feet open. Across this space, and reaching to within 2 feet of the surface at its highest was a barricade, roughly built with large stones. When in use this must have prevented all entrance to the cave, except over the buttress, whence a way led into the entrance. At a later point in the excavation we came to the conclusion that it belonged to a

middle layer in the cave, but it is included here since it obviously belonged to the upper layers outside.

Lower.—Below and beyond the barricade, as we progressed towards the entrance, the lower structures began to appear. Immediately below, on the verge of recess 1, was a cist-like structure (fig. 2) with stones laid horizontally instead of vertically. Its dimensions were difficult to obtain, since the first shape revealed was semi-rectangular, but when fully

Fig. 2. Torrs Cave: Cist-like Structure.

uncovered it appeared very much larger and spread over the structures below it so as to coincide with certain of their walls.

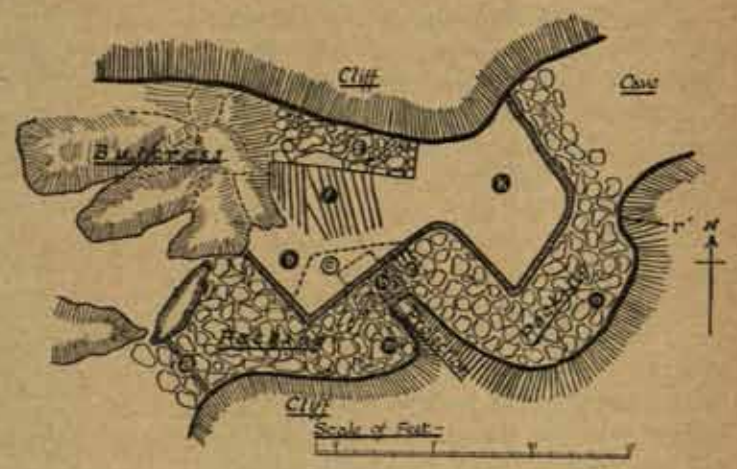
Beyond this structure, on the opposite side and in the angle of the buttress, was a larger erection whose base was not discernible at our second datum. When discovered its top surface sloped downwards to the entrance, but this was not original, since obviously stones had been removed to give it a slope. It stood in the angle between the cliff and the buttress and had two built faces, one running from the buttress, just short of its farthest projection outwards, towards the cliff at the entrance, and the other spanning the space between the termination of the first face and the cliff, a distance of some 2 feet. When fully excavated this erection was found to have a height of 8 feet 2 inches. Because of its flat top, which had been continued across the summit of the buttress, it was named the platform-structure.

The cist-like structure lies on top of several lower constructions and

KEY
Plan, Section & Sketch.

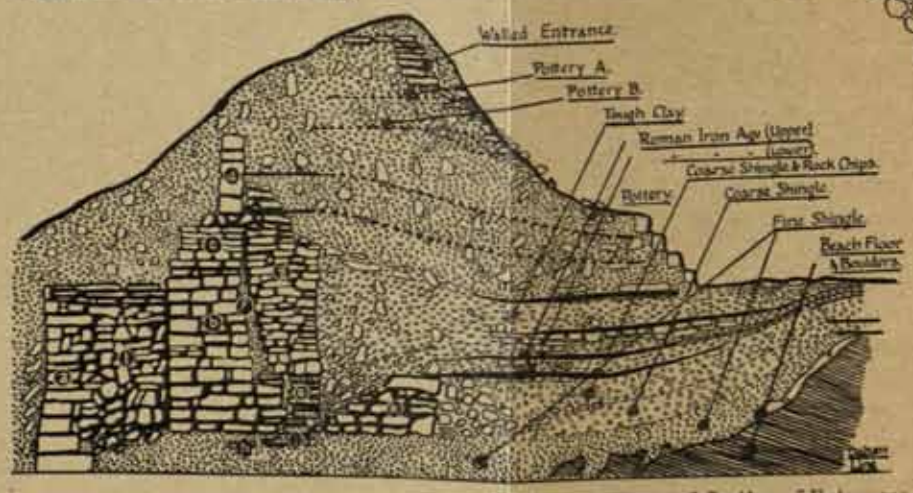
a. Front Wall.
b. Front Blockhouse.
c. Cist-like structure.
d. Barricade.
e. Steps.
f. Stairway.
g. Platform Structure.
h. Aperture Wall.
h. Base of Aperture Wall.
h. Aperture.
j. Base of Steps.
k. Rear Blockhouse.
l. Packing.
m. Recess.
n. Recess.
p. Passage (packing removed)
q. Large Corner Stone used by Lower Roman Iron Age.
r. Section of Cliff at r'.

PLAN of ENTRANCE & STRUCTURES
reduced to a Common Plane.



SECTION THROUGH MOUND
reduced to a Median line.

Scale of Feet:-



Torrs Cave: Plan and Section of Entrances, etc.

S. V. MORRIS. PLATE VII.

[*To face page* 418.

is obviously later than all except the front wall, and probably belongs to a people subsequent to those who were responsible for that erection.

Having completed the excavation of the above structures, a trench was dug along a level represented by our final datum-line. This datum is some 7 feet above the high spring-tides.

The first part of this excavation revealed what we had assumed to be a continuation of the buttress, but which proved to be a boulder some 4 feet high set on edge and parallel with the cliff, thus leaving an entrance 3 feet wide. Blocking this entrance was the outside wall, rising from the datum to a height of 9 feet 6 inches. The boulder was supported by the wall and its packing. Nearby there was another boulder, and yet another large boulder just appeared at the base of the mound. The string of boulders may represent a way up the outside walls from the beach to the top of the buttress and the cave.

This outside wall and its boulder lie at the place where the first recess begins to curve into the cliff. In front of the wall and behind it lay a packing of stones. Those stones behind the wall fill the space between it and the front wall of a blockhouse (fig. 3), and then continue between the side wall of this structure and the cliff in the recess. It was obvious, therefore, that the blockhouse was earlier than the front wall, and, though there were 12 inches of difference in height between the two, the packing served as a platform, 10 feet above the level of the beach. Above the blockhouse lay the cist-like structure. The blockhouse was earlier than the packing and the front wall which surround it, whilst the cist-like structure lay on the packing.

Packing-stones continued into the recess until the projection was reached. In between this projection and the blockhouse, and underneath it, was an aperture wall. In below the projection the space which allows egress into recess 3, a small wall confines the aperture to a width of 2 feet. Unfortunately the wall fell before a reproducible photograph could be taken, but it has been restored as well as circumstances allowed. Later photographs will show this reconstruction.

Beyond the wall the packing continued, but in a more built fashion, as though the aperture had been closed by later occupants. The blockhouse showed signs of disappearing completely, but reappeared eventually at the reduced height of 3 feet 2 inches, as compared with its original 8 feet 4 inches. Another complication arose from the fact that opposite the aperture, and leaning against the blockhouse, were three stones, leading from the broken wall down to the base of the aperture. On top of the broken wall of the blockhouse, the base of the platform-structure was discovered. In an angle of the buttress was a stairway

(fig. 4). The upper part of this stairway had already been found in clearing the platform-structure at a higher level, but its significance had not been realised. In the entrance to the cave, beyond all the structures

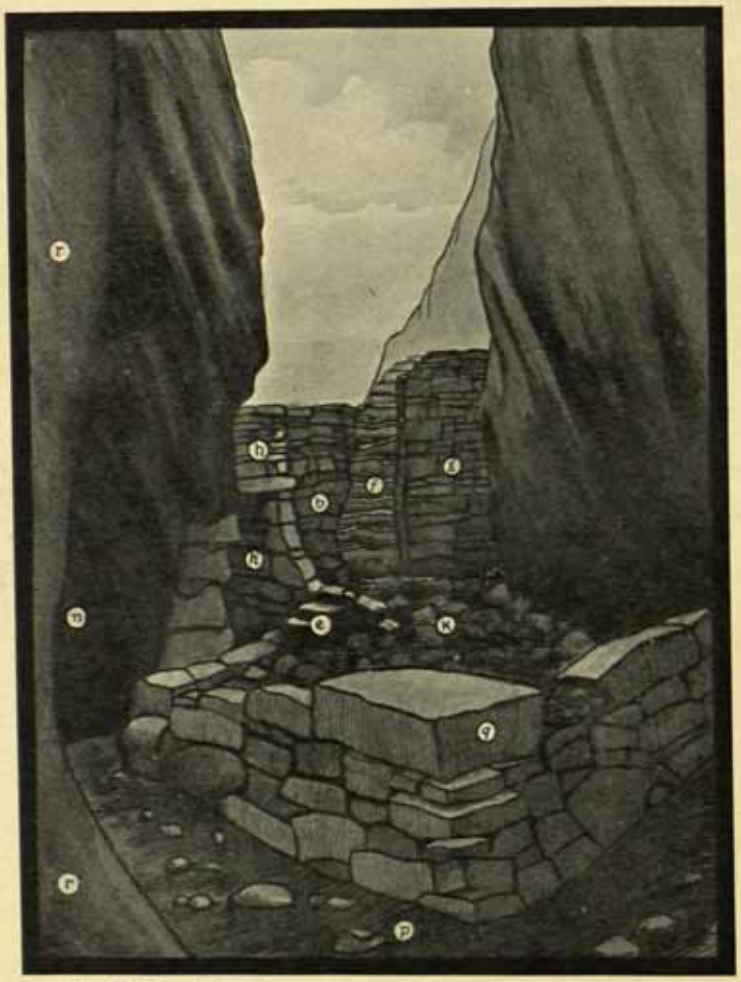


Fig. 3. Torrs Cave: Structures at Entrance as seen from within.

mentioned, lay charcoal of various occupation-layers, the latest being of Iron Age date, but beneath these layers was the last structure, the rear blockhouse, much dilapidated and not easily recognisable.

The lower structures were, therefore, (1) Rear Blockhouse, (2) Platform-Structure, (3) Stairway, (4) Steps, (5) Aperture Wall, (6) Front

Blockhouse, (7) Outside Wall, (8) Cist-like Structure. In addition, as terms to be used in this account, there is the window, situated between the packing over the rear blockhouse and the complete portion of the front blockhouse. The hollow made by the platform-structure, the stairway, the broken butt of the front blockhouse, the window and the packing over the rear blockhouse we named the Sentry-Box, since it appeared to have been used for the purpose of a look-out. Our section

Fig. 4. Torrs Cave: Platform-Structure and Stairway.

through the outside wall and round the blockhouses was the means of entry at the earliest periods, and was named the Passage.

It seemed fairly clear that the oldest part of all was the rear blockhouse, lying exactly at the entrance to the cave. The inner side at its highest point stood 3 feet above the shingle, while the outer wall was reduced in some places to a single stone, though the corner by recess 3 remained to a height of 3 or 4 courses. The blockhouse was built of boulders, some as much as 3 feet long, and the foundations were upon the shingle which sloped away from the north wall; no attempt to secure a firm, flat base had been made. Above what remained of the blockhouse was a layer of charcoal. A hearth lay on the inner cornerstone, and on the stones of this hearth lay charcoal.

Against the view that the two blockhouses were built together there were several objections. The flat slabs of the front building contrasted with the boulders of the rear one; and the rough work, without foundations, the rounded or irregular corners, and the amount of destruction

in the latter contrasted with the well-built, sharp-cornered and well-preserved aspect of the front erection. It is possible, of course, to think of the addition of the front blockhouse after the other had been built.

At present, however, all that emerges clearly is that the blockhouses were built and that the front was broken to allow of the erection of the stairway and the platform-structure. Perhaps it fell into ruin, and the ruin was merely repaired to accommodate these structures. The steps were built over the broken wall and gave access into the sentry-box, which in its origin served some very different purpose from that of a look-out.

The main problem is the relation of the blockhouses to these alterations. In the case of the rear blockhouse, the layers of the third and fourth peoples were spread fairly horizontally over its remains, but both peoples were builders themselves and may have decided to level the rough surface for their own convenience. There is nothing to show the height of the rear blockhouse at the time of the second occupation. It may have acted as a support to the platform-structure.

At the other end of the sentry-box the stairway is steeply built of worn stones which are in many cases blocked underneath, and lead directly outwards from the cave. The buttress is solidly built of rectangular blocks. Though not bonded into the platform-structure, the whole stairway is dependent on it.

The sentry-box was filled with small slabs, often with bones underneath them, along with brown clay washed in from above. When the cist-like structure was cleared we found stone chips and clay filling the space underneath it. There seemed to be no completed end to that part of the blockhouse remaining intact. After being broken the ends of the blockhouse seem to have been left incomplete.

Owing to the slope of the stairway the adjacent platform-structure narrows towards its base.

The front wall is obviously the latest of all the erections, since as a result of its construction the passage was blocked. Suggestion has already been made that there is a continuation of the wall on the other side of the large boulder which keeps it in position on the north. In style it is like the other walls, with the exception of those of the rear blockhouse. The method of reinforcement seems to have been the insertion of a large stone at intervals.

The Relics.

The pottery of the highest layer has already been mentioned. It is quite modern and is probably of eighteenth-century date. Pottery B is less easy to place. It is coarser than A, though similar in its banded ridges, and it was probably covered with brown glaze. Its age cannot be determined, but it cannot be earlier than *c.* 1400 and is quite possibly a century or so later.

None of the layers below this yielded anything. But the Iron Age levels yielded bone worked for various purposes. Besides scrapers and other sharply pointed tools of bone, there were bones with holes pierced through them, a fish-hook (fig. 5, No. 1), two finely worked bone pins (fig. 5, Nos. 6 and 7) and a bone toggle (fig. 5, No. 3). The only pottery definitely assignable to this layer were fragments of two vessels of Samian ware. A blue melon bead (fig. 6, No. 1) was found in the débris of the passage, but this probably belongs to the same occupation. A spindle-whorl (fig. 6, No. 3), various polishing-stones, a stone axe, a piece of Roman glass, some fragments of iron weapons, one with its collar of bone still present, and an iron pin were also found. Nearly all these relics belonged to the lower layer, but some bones and possibly the second piece of Samian ware and a bone pin came from the upper level.

In the two lowest layers nothing was found except a bone handle-plate (fig. 5, No. 4) which lay underneath the stones of a pavement, which we thought to belong to the higher of the two levels, in chamber 1. A bronze bar (fig. 6, No. 6), fluted on two sides, ¼ inch square in section, 6½ inches in length, was found at the side of the cave.

In the packing there was found a piece of native pottery, undatable, on which were faint signs of ornament, also a core of flint.

The Layers.

From the surface downwards there were nine distinguishable layers, excluding the recent occupations of the present and the former century. First there was the eighteenth-century layer with black glazed pottery A, and below that the layer yielding pottery B. Below were other two layers within the framework of the barricade outside. Both seemed to be marked by small fire-places at the second entrance. Below these levels there was a large accumulation of charcoal in the first chamber. This seemed to be connected with the barricade and the way over the platform-structure.

Fig. 5. Objects of Bone and Deer horn from Torrs Cave. (½.)
1. Fish hook. 2. Broken object of bone. 3. Bone hinge or toggle. 4. Bone handle-plate. 5, 8, 9. Bone objects. 6, 7. Bone pins.

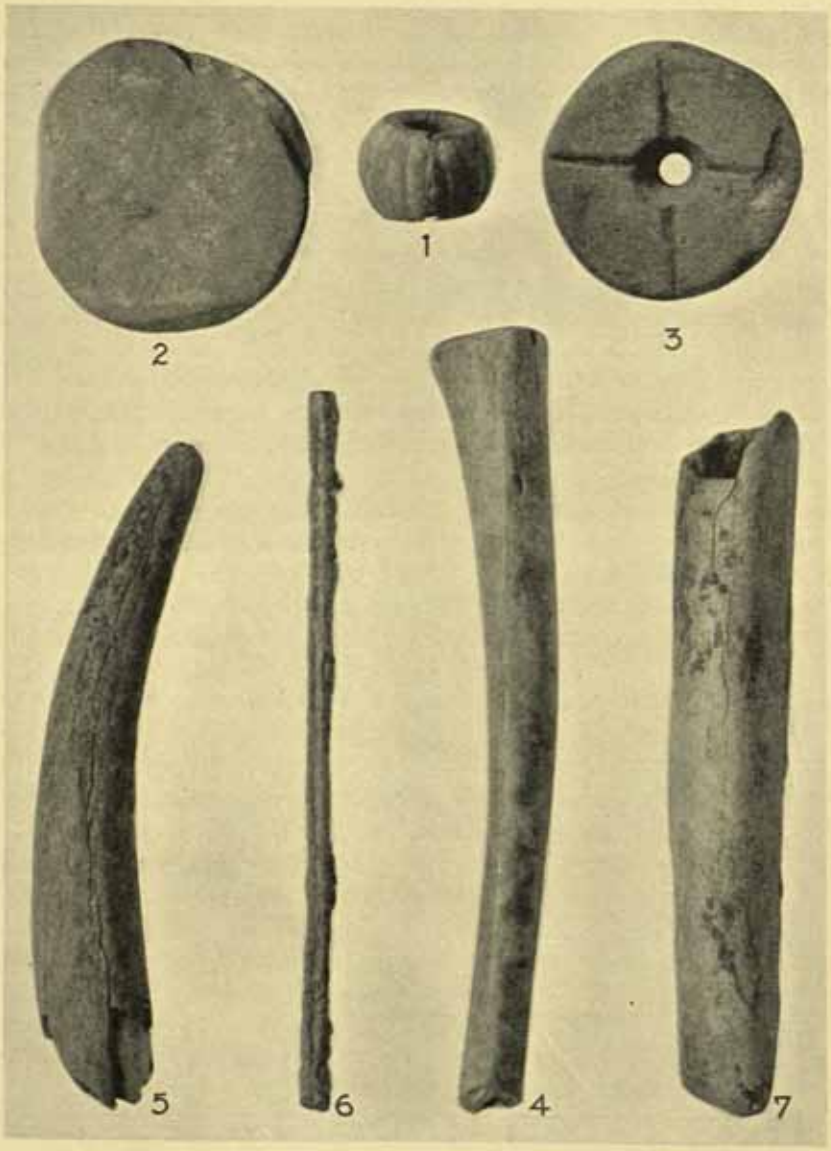


Fig. 6. Objects of Bone, Deer horn, Glass, and Stone from Torrs Cave.
(Nos. 1 to 5 = ⅔ and 6 and 7 = ½ *ca.*)

1. Blue melon bead. 2. Polished stone. 3. Spindle-whorl. 4. Bone implement. 5. Smoothed deer horn. 6. Bronze bar 6½ inches long, fluted on two sides. 7. Human bone, shaped for some purpose.

The next was marked by a pavement and by the presence of charcoal. Farther down were the two Iron Age layers, which extended from the entrance into the second chamber. Below, again, were the two undefined layers of the earliest structures. These were not very largely developed, except in the second chamber, and their course has been sketched somewhat tentatively.

The third and fourth layers were within the framework of the barricade.

In the lower of the two Iron Age layers the charcoal was 6 inches thick and stretched half-way across the first chamber. The upper layer was thinner, varying from 1 inch to 3 inches in thickness, but it reached into the outer half of chamber 2. At the entrance both layers were distinguishable above the rear blockhouse. Farther out there seems to have been a considerable amount of building to raise the level of the lowest Iron Age layer over the aperture wall. Recess 3 may not have been filled up, since almost at the datum-line a small trough about 12 inches square was found. The trough was full of bones and bones lay all round it in the packing. In recess 1 conditions were different. About 3 feet from the top of the packing there was a collection of bones and shells, some of the former being worked. There were many bones of sheep of a kind resembling those from All Canning's Cross. It is definitely an Iron Age level and is probably the same as the lower of the two levels discovered in the cave. There were a few bones at this level. The packing above seemed to be the work of a later people. This would date the front wall to Iron Age 1, but the completion of the packing to the base of the cist-like structure as the work of a later people. That structure was, therefore, constructed not earlier than Iron Age 2 and it might be contemporary with the pavement layer. The latter period also probably saw the infilling of the sentry-box.

The two lowest layers were difficult to define. Charcoal was found in recess 1 at the foot of the wall, on a level with the second occupation layer. Charcoal was also found below the level of the stone supporting the aperture wall. At the same level it was found in the angle of the two blockhouses below the base of the steps. Further signs of charcoal were found at the lower level in the passage round the rear blockhouse, and at the higher level in the entrance to chamber 2. In chamber 1 there was also a small pavement at the higher level and indications of steps at the entrance from the passage.

In the second chamber there is a major development of both layers. Throughout, the main guide in tracing them was the nature of the

material in which they occurred. Thus the lower layer rested on the fine shingle of the beach, whereas between the two there was a coarser type of shingle, and above that was a clay-chip complex. Below the lower layer at its major development in this second chamber was about an inch of clay.

Nothing apart from bone has come from these occupation levels. The bronze bar and the bone handle-plate may belong to one or the other. The bones of the upper layer belonged to sheep and were calcined. The remains of one or two other animals were found, but in such positions that they might have fallen down the side of the cave. There is nothing from the lower layer, but it is possible that some pig bones found upon the charcoal near the steps were connected with it.

The Bones.

The full report of these is given at the end of this paper, but a short summary is necessary here. In the first four layers below the surface nothing of note was found, though there were many animals represented. Sheep, ox, pig, rabbit, hare, dog, cat (wild?), field- and water-vole, common shrew, rat, frog, and several birds. The cist-like structure contained only the shank-bone of an ox and the antler of a red deer. Those in the sentry-box were mostly too rotten to distinguish. One human bone was found in the packing. It was part of a human tibia and had been worked (fig. 6, No. 7). In the Iron Age layers bones of early species of sheep and ox were found as well as those of horse, stag, pig, dog, fox, wild cat, and several birds.

The history of the cave may, therefore, be summarised as follows:—

(1) There may have been prior to the structures an early occupation which is responsible for the charcoal under the steps and aperture wall. On the other hand, this charcoal may represent the earliest traces of people who built the rear blockhouse.

(2) The first structure to be built was the rear blockhouse. To this was added the front blockhouse at a period presumably before the arrival of the second people. The second comers either cut the window or levelled the ruins to build the platform-structure. At this time the passage was more or less at its original level and the steps had to be made as a means of access into the hollow in front of these structures. To support the broken wall and narrow the entrance the aperture wall was made. The purpose of these structures is uncertain. There are fortified caves in Scotland,[1] caves used by the saints in the Early

[1] E.g., *Proc. Soc. Ant. Scot.*, vol. xliii. pp. 246–247.

Christian Era,[1] but there seems to be no known cave with structural developments in the entrance prior to the Iron Age.

(3) The people who built the front wall, and packed the hollows in the ruins of former peoples, possessed an Iron Age culture. They were akin to the peoples of Borness, though apparently less wealthy and skilled, especially in bone-technique. Strategically Torrs is not so well defended as Borness, where there is a large hinterland of forts, so that life at Torrs may well have been more precarious than at Borness.

(4) The pavement layer yielded no relics. Probably the filling of the sentry-box and the bones among its stones may belong to the same period as the pavement layer. The cist-like structure may also be contemporary, since it is difficult to imagine it in existence before the sentry-box was partly filled. From the amount of débris present it seems that several centuries elapsed before the pavement was laid down.

(5) The barricade layer is also two or three centuries later than its predecessor. It is possible to say very little about it or the following occupations. The two highest probably date to the end of the Middle Ages and the eighteenth century respectively.

The relics have been deposited in the Stewartry Museum at the request of the owner of the land, Sir Charles Dunbar Hope-Dunbar. It remains for me to thank him for permission to dig, and the tenant of Torrs Farm, Mr J. Picken, for his hospitality; and to acknowledge the debt I owe to Mr Robison of the Stewartry Museum, to the students who helped me at the first excavation, to Mr W. P. Seymour who helped at the third, and the various workmen who have always entered into the spirit of the excavation. I must also thank Mr K. R. G. Hart for drawing the plans and for the sketch.

REPORT ON BONES OF TORRS CAVE. By J. Wilfred Jackson, D.Sc., F.G.S. (Manchester Museum).

1. In the packing of the first recess, around the front blockhouse.

Sheep.—Many bones, imperfect skull (small), mandibles, teeth (old, and few young). They are of a slender-shanked form, as Romano-British breed; slightly more robust than some I have from All Cannings Cross (Iron Age).

Ox.—Few bones and two teeth.

Stag.—Fragments of antler, including one long, curved tine. Intrusive rabbit bones in the same collection, one with fused foot-bones attached to radius.

[1] E.g., *Proc. Soc. Ant. Scot.*, vol. xliii. p. 152.

2. In cist-like structure.
Ox bone and deer horn.

3. From Iron Age layers at entrance.
Ox (small).—Numerous split and broken bones; calcanea and astragali of small size; teeth and fragmentary jaws; also part of frontal with small horn attached of the small Celtic Shorthorn type.
Sheep (small).—Few limb bones, teeth, and jaws.
Pig.—Humeri, broken bones, teeth, jaws, and broken skull.
Stag.—Imperfect beam of large shed antler; also tines from same and others.
Birds.—Several small bones.
Water-vole.—Several skulls and lower jaws.
Shell-fish.—Buccinum undatum, Littorina Littorea.

4. From Iron Age layers of chamber 1.
Horse (small).—Distal end of radius, distal epiphysis of tibia, distal end of slender metacarpal.
Pig.—Odd bones, teeth, and jaw fragments.
Ox (small).—Various broken bones, loose teeth, jaw fragments, etc. Astragali and calcanea, very small. One perfect radius. All belong to small animals of Celtic Shorthorn type.
Dog.—Fragments of lower jaw with teeth.
Sheep (small).—Various bones and teeth.
Stag (small).—Smoothed tine of antler, base of shed antler with deep cuts.
Birds.—Few bones.

5. From layers below Iron Age in chamber 1.
Sheep (small).—Many fragments of calcined bones.
The above were predominant, but a few others appear to have slipped down the cave wall.
Pig.—Two teeth and imperfect femur.
Dog.—Metatarsal.
Fox.—Ulna.

6. Layers immediately above Iron Age at entrance.
Ox (small).—Astragalus and ribs.
Sheep.—Various bones.
Pig.—Radius.
Dog.—Radius.
Bird (small).—One wing bone.

7. As 6, but inside chamber 1.
   Ox (small).—Various bones, broken, and teeth.
   Sheep (small).—Various bones, tooth and, lower jaw fragment.
   Pig.—Two fragments of jaws.
   Wild Cat.—Two right humeri, long and robust.

8. Second chamber bones.
   Ox.—Tooth and foot bone.
   Sheep.—Scapulæ and upper jaw with teeth.
   Bird.—Two medium-sized bones.

INDEX

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NEILL AND CO., LTD.,
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