

Contents

PREFACE	xi
1. INTRODUCTION	
NICHOLSON, R. Caledonian correlations: Britain and Scandinavia	3
HIGGINS, A. K. & PHILLIPS, W. E. A. East Greenland Caledonides—an extension of the British Caledonides	19
KENNEDY, M. J. The continuation of the Canadian Appalachians into the Caledonides of Britain and Ireland	33
2. BASEMENT-COVER RELATIONSHIPS	
WATSON, J. & DUNNING, F. W. Basement-cover relations in the British Caledonides	67
BAMFORD, D. Seismic constraints on the deep geology of the Caledonides of northern Britain	93
SANDERS, I. S. Observations on eclogite- and granulite-facies rocks in the basement of the Caledonides	97
RATHBONE, P. A. & HARRIS, A. L. Basement-cover relationships at Lewisian inliers in the Moine rocks	101
FLINN, D., FRANK, P. L., BROOK, M. & PRINGLE, I. R. Basement-cover relations in Shetland	109
JOHNSTONE, G. S., PLANT, J. & WATSON, J. V. Regional geochemistry of the Northern Highlands of Scotland	117
BREWER, M. S., BROOK, M. & POWELL, D. Dating of the tectono-metamorphic history of the southwestern Moine, Scotland	129
PIASECKI, M. A. J. & VAN BREEMEN, O. The 'Central Highland Granulites': cover-basement tectonics in the Moine	139
RAMSAY, D. M. & STURT, B. A. The status of the Banff nappe	145
LONG, C. B. & YARDLEY, B. W. D. The distribution of pre-Caledonian basement in the Ox Mountains inlier, Ireland	153
KENNAN, P. S., PHILLIPS, W. E. A. & STROGEN, P. Pre-Caledonian basement to the paratactonic Caledonides in Ireland	157

3. TECTONICS

JOHNSON, M. R. W., SANDERSON, D. J. & SOPER, N. J. Deformation in the Caledonides of England, Ireland and Scotland	165
COWARD, M. P. & SIDDANS, A. W. B. The tectonic evolution of the Welsh Caledonides	187
ROBERTS, J. L. & TREAGUS, J. E. Stratigraphical and structural correlation between the Dalradian rocks of the SW and Central Highlands of Scotland	199
THOMAS, P. R. New evidence for a Central Highland Root Zone	205
BRADBURY, H. J., HARRIS, A. L. & SMITH, R. A. Geometry and emplacement of nappes in the Central Scottish Highlands	213
HARTE, B. The Tarfside succession and the structure and stratigraphy of the eastern Scottish Dalradian rocks	221
BORRADAILE, G. J. Pre-tectonic reconstruction of the Islay anticline: implications for the depositional history of Dalradian rocks in the SW Highlands	229
HUTTON, D. H. W. Dalradian structure in the Creeslough area, NW Donegal, Ireland	239
TANNER, P. W. G. & SHACKLETON, R. M. Structure and stratigraphy of the Dalradian rocks of the Bennabeola area, Connemara, Eire	243
PHILLIPS, W. E. A., FLEGG, A. M. & ANDERSON, T. B. Strain adjacent to the Iapetus suture in Ireland	257
ANDERSON, T. B. & CAMERON, T. D. J. A structural profile of Caledonian deformation in Down	263
EALES, M. H. Structure of the Southern Uplands of Scotland	269
KELLY, T. J. & MAX, M. D. A strain section across part of the Caledonian orogen in W Ireland	275
SHANNON, P. M. The tectonic evolution of the lower Palaeozoic rocks of extreme SE Ireland	281
PARSON, L. M. The state of strain adjacent to the Great Glen fault	287
MENDUM, J. R. Caledonian thrusting in NW Scotland	291
SHACKLETON, R. M. The British Caledonides: comments and summary	299

4. METAMORPHISM

FETTES, D. J. A metamorphic map of the British and Irish Caledonides	307
HARTE, B. & HUDSON, N. F. C. Pelite facies series and the temperatures and pressures of Dalradian metamorphism in E Scotland	323
WELLS, P. R. A. & RICHARDSON, S. W. Thermal evolution of metamorphic rocks in the Central Highlands of Scotland	339

Contents

vii

WINCHESTER, J. A. & WHITLES, K. H. The pattern of three-dimensional metamorphism in the Killin area, Inverness-shire: a direct method of determining the thickness of metamorphic zones in the Caledonides	345
BRADBURY, HARRY J. Migmatisation, deformation and porphyroblast growth in the Dalradian of Tayside, Scotland	351
ASHWORTH, J. R. Textural and mineralogical evolution of migmatites	357
LAMBERT, R. ST J., WINCHESTER, J. A. & HOLLAND, J. G. Time, space and intensity relationships of the Precambrian and lower Palaeozoic metamorphisms of the Scottish Highlands	363
YARDLEY, B. W. D., LONG, C. B. & MAX, M. D. Patterns of metamorphism in the Ox Mountains and adjacent parts of Western Ireland	369
ATKIN, B. P. Oxide-sulphide-silicate mineral phase relations in some thermally metamorphosed graphitic pelites from Co. Donegal, Eire	375
5. FLORAS and FAUNAS	
HOLLAND, C. H. & HUGHES, C. P. Evolving life of the developing Caledonides	387
EDWARDS, D. The early history of vascular plants based on late Silurian and early Devonian floras of the British Isles	405
DINELEY, D. L. & LOEFFLER, E. J. Early vertebrates and the Caledonian earth movements	411
MOLYNEUX, S. G. New evidence for the age of the Manx Group, Isle of Man	415
SMITH, D. G. The distribution of trilete spores in Irish Silurian rocks	423
ALDRIDGE, R. J., DORNING, K. J., HILL, P. J., RICHARDSON, J. B. & SIVETER, D. J. Microfossil distribution in the Silurian of Britain and Ireland	433
HARPER, D. A. T. The environmental significance of some faunal changes in the Upper Ardmillan succession (upper Ordovician), Girvan, Scotland	439
THOMAS, A. T. Trilobite associations in the British Wenlock	447
PAUL, C. R. C. Caledonian echinoderms of the British Isles	453
KOREN', T. N. & RICKARDS, R. B. Extinction of the graptolites	457
6. STRATIGRAPHY and SEDIMENTOLOGY	
HOLLAND, C. H., KELLING, G. & WALTON, E. K. O. T. Jones and after: A multitude of models	469
ANDERTON, R. Slopes, submarine fans, and syn-depositional faults: sedimentology of parts of the Middle and Upper Dalradian in the SW Highlands of Scotland	483
COOK, D. R. & WEIR, J. A. Stratigraphy of the aureole of the Cairnsmore of Fleet pluton, southwest Scotland	489

LEGGETT, J. K. Oceanic sediments from the Ordovician of the Southern Uplands	495
LEGGETT, J. K., MCKERROW, W. S., MORRIS, J. H., OLIVER, G. J. H. & PHILLIPS, W. E. A. The north-western margin of the Iapetus Ocean	499
MORRIS, J. H. Lower Palaeozoic soft-sediment deformation structures in the western end of the Longford-Down inlier, Ireland	513
CAVE, R. Sedimentary environments of the basinal Llandovery of mid-Wales	517
COPE, J. C. W. Early history of the southern margin of the Tywi anticline in the Carmarthen area, South Wales	527
BRÜCK, P. M., COLTHRUST, J. R. J., FEELY, M., GARDINER, P. R. R., PENNEY, S. R., REEVES, T. J., SHANNON, P. M., SMITH, D. G. & VANGESTAINE, M. South-east Ireland: Lower Palaeozoic stratigraphy and depositional history	533
CARLISLE, H. Ordovician stratigraphy of the Tramore area, County Waterford, with a revised Ordovician correlation for south-east Ireland	545
7. VOLCANISM	
STILLMAN, C. J. & FRANCIS, E. H. Caledonide volcanism in Britain and Ireland	557
THORPE, R. S. Late Precambrian igneous activity in Southern Britain	579
MAX, M. D. & LONG, C. B. Basic volcanic rocks in the Dalradian of Ireland	585
KOKELAAR, B. P. Tremadoc to Llanvirn volcanism on the southeast side of the Harlech Dome (Rhobell Fawr), N Wales	591
DUNKLEY, P. N. Ordovician volcanicity of the SE Harlech dome	597
BEVINS, R. E. & ROACH, R. A. Early Ordovician volcanism in Dyfed, SW Wales	603
HOWELLS, M. F., LEVERIDGE, B. E., ADDISON, R., EVANS, C. D. R. & NUTT, M. J. C. The Capel Curig Volcanic Formation, Snowdonia, North Wales: variations in ash-flow tuffs related to emplacement environment	611
NUTT, M. J. C., INESON, P. R. & MITCHELL, J. G. The age of mineralisation at Parys Mountain, Anglesey	619
MILLWARD, D. Ignimbrite volcanism in the Ordovician Borrowdale volcanics of the English Lake District	629
FRENCH, W. J., HASSAN, M. D. & WESTCOTT, J. The petrogenesis of Old Red Sandstone volcanic rocks of the western Ochils, Stirlingshire	635
8. PLUTONISM	
BROWN, G. C. Geochemical and geophysical constraints on the origin and evolution of Caledonian granites	645
HALLIDAY, A. N., AFTALION, M., VAN BREEMEN, O. & JOCELYN, J. Petrogenetic significance of Rb-Sr and U-Pb isotopic systems in the 400 Ma old British Isles granitoids and their hosts	653

Contents

ix

JOHNSTONE, G. S., PLANT, J. & WATSON, J. V. Caledonian granites in relation to regional geochemistry in northern Scotland	663
WILSON, D. & SHEPHERD, J. The Carn Chuinneag granite and its aureole	669
PARSONS, I. The Assynt alkaline suite	677
SMITH, D. I. Caledonian minor intrusions of the N Highlands of Scotland	683
WRIGHT, A. E. & BOWES, D. R. Geochemistry of the appinite suite	699
KENNAN, P. S. Plutonic rocks in the Irish Caledonides	705
ELSDON, R. & KENNAN, P. S. Geochemistry of Irish granites	713
MEIGHAN, I. G. & NEESON, J. C. The Newry Igneous complex, County Down	717
MAX, M. D., PLOQUIN, A. & SONET, J. The age of the Saltees granite in the Rosslare complex	723
NUTT, M. J. C. The Haweswater complex	727
AUTHOR INDEX	735
SUBJECT INDEX	749