

Contents

| | Page |
|--|------|
| Preface: COWARD, M.P., DEWEY, J.F. & HANCOCK, P.L. | ix |
| Appreciation: A.M. Quennell—a prescient tectonician: HANCOCK, P.L. | x |
| Fault Geometry and Associated Processes | |
| JACKSON, J.A. Active normal faulting and crustal extension | 3 |
| GIBBS, A. Development of extension and mixed-mode sedimentary basins | 19 |
| KUSZNIR, N.J. & PARK, R.G. The extensional strength of the continental lithosphere: its dependence on geothermal gradient, and crustal composition and thickness | 35 |
| LYNCH, H.D. & MORGAN, P. The tensile strength of the lithosphere and the localization of extension | 53 |
| KEEN, C.E. Some important consequences of lithospheric extension | 67 |
| BARR, D. Lithospheric stretching, detached normal faulting and footwall uplift | 75 |
| VENDEVILLE, B., COBBOLD, P.R., DAVY, P., BRUN, J.P. & CHOUKROUNE, P. Physical models of extensional tectonics at various scales | 95 |
| MCCLAY, K.R. & ELLIS, P.G. Analogue models of extensional fault geometries | 109 |
| HANCOCK, P.L. & BEVAN, T.G. Brittle modes of foreland extension | 127 |
| LEEDER, M.R. & GAWTHORPE, R.L. Sedimentary models for extensional tilt-block/half-graben basins | 139 |
| Extension in the Basin and Range Province and East Pacific Margin | |
| HAMILTON, W. Crustal extension in the Basin and Range Province, southwestern United States | 155 |
| CONEY, P.J. The regional tectonic setting and possible causes of Cenozoic extension in the North American Cordillera | 177 |
| SONDER, L.J., ENGLAND, P.C., WERNICKE, B. P. & CHRISTIANSEN, R.L. A physical model for Cenozoic extension of western North America | 187 |
| WERNICKE, B.P., CHRISTIANSEN, R.L., ENGLAND, P.C. & SONDER, L.J. Tectonomagmatic evolution of Cenozoic extension in the North American Cordillera | 203 |
| ALLMENDINGER, R.W., HAUGE, T.A., HAUSER, E.C., POTTER, C.J. & OLIVER, J. Tectonic heredity and the layered lower crust in the Basin and Range Province, western United States .. | 223 |
| DAVIS, G.H. A shear-zone model for the structural evolution of metamorphic core complexes in southeastern Arizona | 247 |
| LEE, J., MILLER, E.L. & SUTTER, J.F. Ductile strain and metamorphism in an extensional tectonic setting: a case study from the northern Snake Range, Nevada, USA | 267 |

| | |
|---|-----|
| HOWARD, K.A. & JOHN, B.E. Crustal extension along a rooted system of imbricate low-angle faults: Colorado River extensional corridor, California and Arizona | 299 |
| JOHN, B.E. Geometry and evolution of a mid-crustal extensional fault system: Chemehuevi Mountains, southeastern California | 313 |
| BRUHN, R.L., GIBLER, P.R. & PARRY, W.T. Rupture characteristics of normal faults: an example from the Wasatch fault zone, Utah | 337 |
| EATON, G.P. Topography and origin of the southern Rocky Mountains and Alvarado Ridge .. | 355 |
| EDDINGTON, P.K., SMITH, R.B. & RENGGLI, C. Kinematics of Basin and Range intraplate extension | 371 |
| HODGES, K.V., WALKER, J.D. & WERNICKE, B.P. Footwall structural evolution of the Tucki Mountain detachment system, Death Valley region, southeastern California | 393 |
| THOMPSON, B., MERCIER, E. & ROOTS, C. Extension and its influence on Canadian Cordilleran passive-margin evolution | 409 |
| GARRETT, S.W. & STOREY, B.C. Lithospheric extension on the Antarctic Peninsula during Cenozoic subduction | 419 |
| DALZIEL, I.W.D., STOREY, B.C., GARRETT, S.W., GRUNOW, A.M., HERROD, L.D.B. & PANKHURST, R.J. Extensional tectonics and the fragmentation of Gondwanaland | 433 |

Extension in the NW European Continental Shelf

| | |
|--|-----|
| CHEADLE, M.J., MCGEARY, S., WARNER, M.R. & MATTHEWS, D.H. Extensional structures on the western UK continental shelf: a review of evidence from deep seismic profiling | 445 |
| BEACH, A., BIRD, T. & GIBBS, A. Extensional tectonics and crustal structure: deep seismic reflection data from the northern North Sea Viking graben | 467 |
| ZERVOS, F. A compilation and regional interpretation of the northern North Sea gravity map . | 477 |
| LAUBACH, S.E. & MARSHAK, S. Fault patterns generated during extensional deformation of crystalline basement, NW Scotland | 495 |
| KIRTON, S.R. & HITCHEN, K. Timing and style of crustal extension N of the Scottish mainland . | 501 |
| FIELDING, C.R. & JOHNSON, G.A.L. Sedimentary structures associated with extensional fault movement from the Westphalian of NE England | 511 |
| KARNER, G.D., LAKE, S.D. & DEWEY, J.F. The thermal and mechanical development of the Wessex Basin, southern England | 517 |
| SERANNE, M. & SEGURET, M. The Devonian basins of western Norway: tectonics and kinematics of an extending crust | 537 |

Extension in the Middle East

| | |
|--|-----|
| CHENET, P.Y., COLLETTA, B., LETOUZEY, J., DESFORGES, G., OUSSET, E. & ZAGHLOUL, E.A. Structures associated with extensional tectonics in the Suez rift | 551 |
| COURTILLOT, V., ARMijo, R. & TAPPONNIER, P. Kinematics of the Sinai triple junction and a two-phase model of Arabia–Africa rifting | 559 |

Contents

vii

ŞENGÖR, A.M.C. Cross-faults and differential stretching of hanging walls in regions of low-angle normal faulting: examples from western Turkey 575

Extension in Thrust Belts

LEGGETT, J.K., LUNDBERG, N., BRAY, C.J., CADET, J.P., KARIG, D.E., KNIPE, R.J. & VON HUENE, R. Extensional tectonics in the Honshu fore-arc, Japan: integrated results of DSDP Legs 57, 87 and reprocessed multichannel seismic reflection profiles 593

ROYDEN, L.H. & BURCHFIEL, B.C. Thin-skinned N-S extension within the convergent Himalayan region: gravitational collapse of a Miocene topographic front 611