BIBLIOGRAPHY AND AUTHOR INDEX

Numbers in square brackets refer to the pages on which the reference is cited.

Abbott, M. R. (1960). Salinity effects in estuaries. *J. Marine Res.* **18**, 101–11. [p. 163.]

Abraham, G. and Eysink, W. D. (1969). Jets issuing into fluid with a density gradient. *J. Hydraulic Res.* **7**, 145–75. [p. 198.]

Anati, D. A. (1971). On the mechanism of the deep mixed layer formation during Medoc '69. *Cahiers Oceanographique*, **23**, 427–43. [p. 304.]

Atlas, D., Metcalf, J. I., Richter, J. H. and Gossard, E. E. (1970). The birth of 'CAT' and microscale turbulence. *J. Atmos. Sci.* **27**, 903–13. [p. 106.]

Axford, D. N. (1971). Spectral analysis of an aircraft observation of gravity waves. *Quart. J. Roy. Met. Soc.* **97**, 313–21. [p. 336.]

Baines, P. G. (1969). Waves and stability in rotating or stratified fluids. *Ph.D. thesis*. University of Cambridge. [p. 30.]

Baines, P. G. and Gill, A. E. (1969). On thermohaline convection with linear gradients. *J. Fluid Mech.* **37**, 289–306. [pp. 253, 256.]

Baines, W. D. (1975). Entrainment by a plume or jet at a density interface. *J. Fluid Mech.* **68**, 309–20. [pp. 296, 307.]

Baines, W. D. and Turner, J. S. (1969). Turbulent buoyant convection from a source in a confined region. *J. Fluid Mech.* **37**, 51–80. [p. 232.]

Bakke, P. and Leach, S. J. (1965). Turbulent diffusion of a buoyant layer at a wall. *Appl. Sci. Res.* **15**, 97–136. [p. 159.]

Ball, F. K. (1957). The katabatic winds of Adelie Land and King George V Land. *Tellus*, **9**, 201–8. [p. 69.]

Ball, F. K. (1960). Control of inversion height by surface heating. *Quart. J. Roy. Met. Soc.* **86**, 483–94. [p. 306.]

Ball, F. K. (1964). Energy transfer between external and internal gravity waves. *J. Fluid Mech.* **19**, 465–78. [p. 41.]

Barr, D. I. H. (1967). Densimetric exchange flow in rectangular channels. III. Large scale experiments. *La Houille Blanche*, **22**, 619–32. [p. 71.]

Batchelor, G. K. (1952). Diffusion in a field of homogeneous turbulence. *Proc. Camb. Phil. Soc.* **48**, 345–62. [p. 205.]

Batchelor, G. K. (1953*a*). The conditions for dynamical similarity of motions of a frictionless perfect-gas atmosphere. *Quart. J. Roy. Met. Soc.* **79**, 224–35. [p. 12.]

Batchelor, G. K. (1953*b*). *The theory of homogeneous turbulence*. Cambridge University Press. [pp. 141, 146.]

Batchelor, G. K. (1954*a*). Heat convection and buoyancy effects in fluids. *Quart. J. Roy. Met. Soc.* **80**, 339–58. [pp. 166, 170, 194.]

Batchelor, G. K. (1954*b*). Heat transfer by free convection across a closed cavity between vertical boundaries at different temperatures. *Quart. Appl. Maths.* **12**, 209–33. [p. 246.]

Batchelor, G. K. (1967). *An introduction to fluid dynamics*. Cambridge University Press. [p. 3.]

Bénard, H. (1901). Les tourbillons cellulaires dans une nappe liquide transportant de la chaleur par convection en régime permanent. *Ann. Chim. Phys.* (7) **23**, 62–144. [pp. 208, 216.]

Benjamin, T. B. (1963). The threefold classification of unstable disturbances in flexible surfaces bounding inviscid flows. *J. Fluid Mech.* **16**, 436–50. [pp. 92, 94.]

Benjamin, T. B. (1966). Internal waves of finite amplitude and permanent form. *J. Fluid Mech.* **25**, 241–70. [pp. 53, 55, 57, 67.]

Benjamin, T. B. (1967). Internal waves of permanent form in fluids of great depth. *J. Fluid Mech.* **29**, 559–92. [pp. 54, 67.]

Benjamin, T. B. (1968). Gravity currents and related phenomena. *J. Fluid Mech.* **31**, 209–48. [pp. 70, 73.]

Benjamin, T. B. (1970). Upstream influence. *J. Fluid Mech.* **40**, 49–79. [pp. 57, 62.]

Beran, D. W., Little, C. G. and Willworth, B. C. (1971). Acoustic Doppler measurements of vertical velocities in the atmosphere. *Nature*, **230**, 160–2. [p. 337.]

Betchov, R. and Criminale, W. O. (1967). *Stability of parallel flows*. New York: Academic Press. [pp. 92, 107.]

Birikh, R. V., Gershuni, G. Z. and Zhukhovitshii, E. M. (1969). Stability of the steady convective motion of a fluid with a longitudinal temperature gradient. *J. Appl. Math. and Mech.* **33**, 937–47. [p. 249.]

Booker, J. R. and Bretherton, F. P. (1967). The critical layer for internal gravity waves in a shear flow. *J. Fluid Mech.* **27**, 513–39. [p. 38.]

Boussinesq, J. (1903). *Théorie analytique de la chaleur*, vol. 2. Paris: Gathier-Villars. [p. 9.]

Bretherton, F. P. (1964). Resonant interactions between waves: The case of discrete oscillations. *J. Fluid Mech.* **20**, 457–79. [p. 41.]

Bretherton, F. P. (1966). The propagation of groups of internal gravity waves in a shear flow. *Quart. J. Roy. Met. Soc.* **92**, 466–80. [p. 37.]

Bretherton, F. P. (1967.) The time-dependent motion due to a cylinder moving in an unbounded rotating or stratified fluid. *J. Fluid Mech.* **28**, 545–70. [p. 80.]

Bretherton, F. P. (1969*a*). Momentum transport by gravity waves. *Quart. J. Roy. Met. Soc.* **95**, 213–43. [p. 327.]

Bretherton, F. P. (1969*b*). On the mean motion induced by internal gravity waves. *J. Fluid Mech.* **36**, 785–803. [p. 327.]

Bretherton, F. P. (1969*c*). Waves and turbulence in stably stratified fluids. *Radio Science*, **4**, 1279–87. [p. 330.]

Bretherton, F. P. and Garrett, C. J. R. (1968). Wave trains in inhomogeneous moving media. *Proc. Roy. Soc.* A **302**, 529–54. [pp. 37, 38.]

Briggs, G. A. (1969). *Plume rise*. U.S. Atomic Energy Commission Critical Review Series. [pp. 193, 198.]

Browning, K. A. (1971). Structure of the atmosphere in the vicinity of large-amplitude Kelvin–Helmholtz billows, *Quart. J. Roy. Met. Soc.* **97**, 283–99. [p. 318.]

Browning, K. A. and Watkins, C. D. (1970). Observations of clear air turbulence by high power radar. *Nature*, **227**, 260–3. [p. 106.]

Brunt, D. (1952). *Physical and dynamical meteorology*. Cambridge University Press. [pp. 12, 216.]

Businger, J. A. (1969). Note on the critical Richardson number(s). *Quart. J. Roy. Met. Soc.* **95**, 653–4. [p. 323.]

Busse, F. H. (1967). On the stability of two-dimensional convection in a layer heated from below. *J. Math. and Phys.* **46**, 140–50. [p. 212.]

Busse, F. H. (1969). On Howard's upper bound for heat transport by turbulent convection. *J. Fluid Mech.* **37**, 457–77. [p. 215.]

Busse, F. H. and Whitehead, J. A. (1971). Instabilties of convection rolls in a high Prandtl number fluid. *J. Fluid Mech.* **47**, 305–20. [p. 218.]

Cabelli, A. and Davis, G. de Vahl (1971). A numerical study of the Bénard cell. *J. Fluid Mech.* **45**, 805–29. [p. 223.]

Carstens, T. J. (1964). Stability of shear flow near the interface of two fluids. *Doctoral Dissertation*. University of California. [p. 122.]

Chandrasekhar, S. (1961). *Hydrodynamic and hydromagnetic stability*. Oxford: Clarendon Press. [pp. 211, 216.]

Charnock, H. (1967). Flux-gradient relations near the ground in unstable conditions. *Quart. J. Roy. Met. Soc.* **93**, 97–100. [pp. 133, 135.]

Chen, C. F., Briggs, D. G. and Wirtz, R. A. (1971). Stability of thermal convection in a salinity gradient due to lateral heating. *Int. J. Heat and Mass Trans.* **14**, 57–65. [p. 268.]

Chen, M. M. and Whitehead, J. A. (1968). Evolution of two-dimensional periodic Rayleigh convection cells of arbitrary wavenumbers. *J. Fluid Mech.* **31**, 1–15. [p. 217.]

Claus, A. J. (1964). Large-amplitude motion of a compressible fluid in the atmosphere. *J. Fluid Mech.* **19**, 267–89. [pp. 11, 59.]

Corby, G. A. and Wallington, C. E. (1956). Airflow over mountains: the lee-wave amplitude. *Quart. J. Roy. Met. Soc.* **82**, 266–74. [p. 35.]

Craik, A. D. D. (1968). Resonant gravity-wave interactions in a shear flow. *J. Fluid Mech.* **34**, 531–49. [p. 124.]

Craya, A. (1949). Theoretical research on the flow of non-homogeneous fluids. *La Houille Blanche*, **4**, 44–55. [p. 76.]

Cromwell, T. (1960). Pycnoclines created by mixing in an aquarium tank. *J. Mar. Res.* **18**, 73–82. [p. 289.]

Dake, J. M. K. and Harleman, D. R. F. (1966). An analytical and experimental investigation of thermal stratification in lakes and ponds. *M.I.T. Hydrodynamics Lab. Rep. no. 99*. [p. 306.]

Davis, R. E. (1969). The two-dimensional flow of a stratified fluid over an obstacle. *J. Fluid Mech.* **36**, 127–43. [pp. 62, 119.]

Davis, R. E. and Acrivos, A. (1967*a*). Solitary internal waves in deep water. *J. Fluid Mech.* **29**, 593–607. [p. 54.]

Davis, R. E. and Acrivos, A. (1967*b*). The stability of oscillatory internal waves. *J. Fluid Mech.* **30**, 723–36. [pp. 43, 123.]

Deardorff, J. W. (1964). A numerical study of two-dimensional parallel-plate convection. *J. Atmos. Sci.* **21**, 419–38. [p. 222.]

Deardorff, J. W. (1965). A numerical study of pseudo three-dimensional parallel-plate convection. *J. Atmos. Sci.* **22**, 419–35. [p. 223.]

Deardorff, J. W. (1966). The counter-gradient heat flux in the lower atmosphere and the laboratory. *J. Atmos. Sci.* **23**, 503–6. [p. 234.]

Deardorff, J. W. and Willis, G. E. (1965). The effect of two-dimensionality on the suppression of thermal turbulence. *J. Fluid Mech.* **23**, 337–53. [p. 221.]

Deardorff, J. W. and Willis, G. E. (1967). Investigation of turbulent thermal convection between horizontal plates. *J. Fluid Mech.* **28**, 675–704. [p. 221.]

Deardorff, J. W., Willis, G. E. and Lilly, D. K. (1969). Laboratory investigation of non-steady penetrative convection. *J. Fluid Mech.* **35**, 7–31. [pp. 235, 306].

Debler, W. R. (1959). Stratified flow into a line sink. *J. Eng. Mech. Div., Proc. Am. Soc. Civil Eng.* **85**, 51–65. [p. 77.]

Defant, A. (1961). *Physical oceanography*, vols. I and II. London: Pergamon Press. [pp. 17, 125, 306.]

Degens, E. T. and Ross, D. A. (eds.) (1969). *Hot brines and recent heavy metal deposits in the Red Sea.* Berlin: Springer–Verlag. [p. 271.]

Dore, B. D. (1970). Mass transport in layered fluid systems. *J. Fluid Mech.* **40**, 113–26. [p. 51.]

Drazin, P. G. (1958). The stability of a shear layer in an unbounded heterogeneous inviscid fluid. *J. Fluid Mech.* **4**, 214–24. [p. 99.]

Drazin, P. G. (1962). On stability of parallel flow of an incompressible fluid of variability density and viscosity. *Proc. Camb. Phil. Soc.* **58**, 646–61. [p. 107.]

Drazin, P. G. (1969). Non-linear internal gravity waves in a slightly stratified atmosphere. *J. Fluid Mech.* **36**, 433–46. [p. 11.]

Drazin, P. G. (1970). Kelvin–Helmholtz instability of finite amplitude. *J. Fluid Mech.* **42**, 321–35. [p. 114.]

Drazin, P. G. and Howard, L. N. (1966). Hydrodynamic stability of parallel flow of inviscid fluid. *Advanc. Appl. Mech.* **9**, 1–89. [pp. 92, 100.]

Drazin, P. G. and Moore, D. W. (1967). Steady two-dimensional flow of fluid of variable density over an obstacle. *J. Fluid Mech.* **28**, 353–70. [p. 59.]

Dubreil–Jacotin, M. L. (1937). Sur les théorèmes d'existence relatifs aux ondes permanentes périodiques à deux dimensions dans les liquides hétérogènes. *J. Math. Pures Appl.* (9), **16**, 43–67. [p. 55.]

Dyer, A. J. (1965.) The flux-gradient relation for turbulent heat transfer in the lower atmosphere. *Quart. J. Roy. Met. Soc.* **91**, 151–7. [p. 135.]

Eckert, E. R. G. and Carlson, W. O. (1961). Natural convection in an air layer enlosed between two vertical plates with different temperatures. *Int. J. Heat and Mass Trans.* **2**, 106–20. [p. 246.]

Ekman, V. W. (1904). On dead water. *Sci. Results Norwegian N. Polar Exp. Vol. 5 No. 15* (Christiania). [pp. 1, 19.]

Elder, J. W. (1965*a*). Laminar free convection in a vertical slot. *J. Fluid Mech.* **23**, 77–98. [p. 246.]

Elder, J. W. (1965*b*). Turbulent free convection in a vertical slot. *J. Fluid Mech.* **23**, 99–111. [pp. 246, 249.]

Elder, J. W. (1967). Steady free convection in a porous medium heated from below. *J. Fluid Mech.* **27**, 29–48. [p. 225.]

Elder, J. W. (1968). The unstable thermal interface. *J. Fluid Mech.* **32**, 69–96. [pp. 227, 229.]

Elder, J. W. (1969*a*). The temporal development of a model of high Rayleigh number convection. *J. Fluid Mech.* **35**, 417–37. [pp. 224, 237.]

Elder, J. W. (1969*b*). Numerical experiments with thermohaline convection. *Phys. of Fluids*, **12**, Suppl. II, 194–7. [p. 261.]

Ellison, T. H. (1957). Turbulent transport of heat and momentum from an infinite rough plane. *J. Fluid Mech.* **2**, 456–66. [pp. 135, 137, 148, 160.]

Ellison, T. H. (1959). Turbulent diffusion. *Sci. Prog.* **47**, 495–506. [p. 140.]

Ellison, T. H. (1961). Stratified flows. *Sci. Prog.* **49**, 57–67. [p. 67.]

Ellison, T. H. (1966). A note on the influence of density stratification on turbulence. Unpub. manuscript, quoted by Yaglom (1969). [pp. 148, 150.]

Ellison, T. H. and Turner, J. S. (1959). Turbulent entrainment in stratified flows. *J. Fluid Mech.* **6**, 423–48. [pp. 177, 179, 182, 185, 187, 297.]

Ellison, T. H. and Turner, J. S. (1960). Mixing of dense fluid in a turbulent pipe flow. *J. Fluid Mech.* **8**, 514–44. [pp. 159, 161.]

Fischer, H. B. (1971). The dilution of an undersea sewage cloud by salt fingers. *Water Research*, **5**, 909–15. [p. 272.]

Fischer, H. B. (1972). Mass transport mechanisms in partially stratified estuaries. *J. Fluid Mech.* **53**, 671–87. [p. 162.]

Fjeldstad, J. E. (1933). Interne Wellen. *Geofys. Publ.* **10**, no. 6, 1–35. [p. 21.]

Fofonoff, N. P. and Webster, T. F. (1971). Current measurements in the western Atlantic. *Phil. Trans.* A **270**, 423–36. [p. 333.]

Fohl, T. (1967). Optimization of flow for forcing stack wastes to high altitudes. *J. Air. Poll. Control. Assoc.* **17**, 730–3. [p. 202.]

Fortescue, G. E. and Pearson, J. R. A. (1967.) On gas absorption into a turbulent liquid. *Chem. Eng. Sci.* **22**, 1163–76. [p. 297.]

Foster, M. R. and Saffman, P. G. (1970). Drag of a body moving transversely in a confined stratified fluid. *J. Fluid Mech.* **43**, 407–18. [p. 87.]

Foster, T. D. (1965). Onset of convection in a layer of fluid cooled from above. *Phys. Fluids*, **8**, 1770–4. [p. 229.]

Foster, T. D. (1969). The effect of initial conditions and lateral boundaries on convection. *J. Fluid Mech.* **37**, 81–94. [p. 217.]

Foster, T. D. (1971*a*). A convective model for the diurnal cycle in the upper ocean. *J. Geophys. Res.* **76**, 666–75. [p. 306.]

Foster, T. D. (1971*b*). Intermittent convection. *Geophys. Fluid Dyn.* **2**, 201–17. [p. 229.]

Fromm, J. E. (1965). Numerical solutions of the nonlinear equations for a heated fluid layer. *Phys. Fluids*, **8**, 1757–69. [p. 222.]

Gage, K. S. (1971). The effect of stable stratification on the stability of viscous parallel flows. *J. Fluid Mech.* **47**, 1–20. [p. 109.]

Gage, K. S. and Reid, W. H. (1968). The stability of thermally stratified plane Poiseuille flow. *J. Fluid Mech.* **33**, 21–32. [pp. 109, 211.]

Garrett, C. and Munk, W. (1971). Internal wave spectra in the presence of fine structure. *Phys. Oceanog.* **1**, 196–202. [p. 21.]

Gebhart, B. (1969). Natural convection flow, instability, and transition. *J. Heat Transfer*, **91**, 293–309. [p. 242.]

Gill, A. E. (1966). The boundary layer régime for convection in a rectangular cavity. *J. Fluid Mech.* **26**, 515–36. [pp. 243, 247.]

Gill, A. E. and Davey, A. (1969). Instabilities of a buoyancy-driven system. *J. Fluid Mech.* **35**, 775–98. [pp. 242, 248.]

Gill, A. E. and Turner, J. S. (1969). Some new ideas about the formation of Antarctic bottom water. *Nature*, **224**, 1287–8. [p. 286.]

Gille, J. (1967). Interferometric measurement of temperature gradient reversal in a layer of convecting air. *J. Fluid Mech.* **30**, 371–84. [p. 221.]

Globe, S. and Dropkin, D. (1959). Natural convection heat transfer in liquids confined by two horizontal plates and heated from below. *J. Heat Trans.* **81**, 156–65. [pp. 219, 223.]

Goldstein, S. (1931). On the stability of superposed streams of fluids of different densities. *Proc. Roy. Soc.* A **132**, 524–48. [p. 97.]

Görtler, H. (1943). Uber eine Schwingungserscheingung in Flüssigkeiten mit stabiler Dichteschichtung. *Z. agnew. Math. Mech.* **23**, 65–71. [p. 24.]

Gough, D. O., Spiegel, E. A. and Toomre, J. (1975). Modal equations for cellular convection. *J. Fluid Mech.* **68**, 695–719. [p. 225.]

Graebel, W. P. (1969). On the slow motion of bodies in stratified and rotating fluids. *Q. J. Mech. Appl. Maths.* **22**, 39–54. [p. 85.]

Grant, H. L., Moilliet, A. and Vogel, W. M. (1968). Some observations of the occurrence of turbulence in and above the thermocline. *J. Fluid Mech.* **34**, 443–8. [p. 316.]

Grant, H. L., Stewart, R. W. and Moilliet, A. (1962). Turbulence spectra from a tidal channel. *J. Fluid Mech.* **12**, 241–68. [p. 141.]

Grigg, H. R. and Stewart, R. W. (1963). Turbulent diffusion in a stratified fluid. *J. Fluid Mech.* **15**, 174–86. [pp. 143, 202, 289.]

Hanna, S. R. (1969). The thickness of the planetary boundary layer. *Atmos. Envir.* **3**, 519–36. [p. 309.]

Hansen, D. V. and Rattray, M. (1965). Gravitational circulation in straits and estuaries. *J. Marine Res.* **23**, 104–22. [p. 163.]

Harleman, D. R. F. (1961). Stratified flow. In *Handbook of fluid mechanics* (ed. V. L. Streeter), ch. 26. New York: McGraw-Hill. [p. 75.]

Harleman, D. R. F. and Ippen, A. T. (1967). Two-dimensional aspects of salinity intrusion in estuaries. *Comm. on Tidal Hydr. U.S. Army Corps of Eng. Tech. Bull. no. 23.* [p. 158.]

Harleman, D. R. F., Jordan, J. M. and Lin, J. D. (1959). The diffusion of two fluids of different density in a homogeneous turbulent field. *M.I.T. Hydr. Lab. Tech. Report no.* 31. [p. 162.]

Hart, J. E. (1971*a*). Stability of the flow in a differentially heated inclined box. *J. Fluid Mech.* **47**, 547–76. [p. 249.]

Hart, J. E. (1971*b*). On sideways diffusive instability. *J. Fluid Mech.* **49**, 279–88. [p. 269.]

Hart, J. E. (1971*c*). A possible mechanism for boundary layer mixing and layer formation in a stratified fluid. *J. Phys. Oceanog.* **1**, 258-62. [p. 126].

Hasselman, K. (1966). Feynman diagrams and interaction rules of wave–wave scattering processes. *Rev. Geophys.* **4**, 1–32. [p. 41.]

Hasselman, K. (1967). A criterion for non-linear wave stability. *J. Fluid Mech.* **30**, 737–9. [p. 43.]

Hazel, P. (1967). The effects of viscosity and heat conduction on internal gravity waves at a critical level. *J. Fluid Mech.* **30**, 775–81. [p. 38.]

Hazel, P. (1972). Numerical studies of the stability of inviscid stratified shear flows. *J. Fluid Mech.* **51**, 39–61. [pp. 99, 101, 103.]

Herring, J. R. (1963). Investigation of problems in thermal convection. *J. Atmos. Sci.* **20**, 325–38. [pp. 224, 238.]

Herring, J. R. (1964). Investigation of problems in thermal convection: rigid boundaries. *J. Atmos. Sci.* **21**, 277–90. [pp. 224, 237.]

Hines, C. O. (1971). Generalizations of the Richardson criterion for the onset of atmospheric turbulence. *Quart. J. Roy. Met. Soc.* **97**, 429–39. [p. 323.]

Hinwood, J. B. (1967). The stability of a stratified fluid. *J. Fluid Mech.* **29**, 233–40. [p. 115.]

Hinwood, J. B. (1970). The study of density stratified flows up to 1945. I. Nearly horizontal flows with stable interfaces. *La Houille Blanche*, **25**, 347–59 [p. 2.]

Hoare, R. A. (1966). Problems of heat transfer in Lake Vanda, a density stratified Antarctic Lake. *Nature*, **210**, 787–9. [p. 270.]

Houghton, D. and Woods, J. D. (1969). The slippery seas of Acapulco. *New Scientist*, January, 134–6. [p. 156.]

Howard, L. N. (1961). Note on a paper of John W. Miles. *J. Fluid Mech.* **10**, 509–12. [p. 100.]

Howard, L. N. (1963). Heat transport by turbulent convection. *J. Fluid Mech.* **17**, 405–32. [p. 215.]

Howard, L. N. (1964). Convection at high Rayleigh number. *Proc. eleventh Int. Congress Applied Mechanics, Münich* (ed. H. Görtler), pp. 1109–15. Berlin: Springer–Verlag [pp. 214, 226, 229, 277.]

Huber, D. G. (1960). Irrotational motion of two fluid strata towards a line sink. *J. Eng. Mech. Div. Am. Soc. Civil Eng.* **86**, EM4, 71–86. [p. 76.]

Hunt, J. N. (1961). Interfacial waves of finite amplitude. *La Houille Blanche*, **16**, 515–31. [p. 49.]

Huppert, H. E. (1968). Appendix to paper by J. W. Miles. *J. Fluid Mech.* **33**, 803–14. [p. 61.]

Huppert, H. E. (1971). On the stability of a series of double-diffusive layers. *Deep-Sea Res.* **18**, 1005–21. [pp. 275, 280.]

Huppert, H. E. and Miles, J. W. (1969). Lee waves in a stratified flow. Part 3. Semi-elliptical obstacle. *J. Fluid Mech.* **35**, 481–6. [p. 60.]

Hurle, D. T. J. and Jakeman, E. (1971). Soret-driven thermosolutal convection. *J. Fluid Mech.* **47**, 667–87. [p. 263.]

Hurley, D. G. (1969). The emission of internal waves by vibrating cylinders. *J. Fluid Mech.* **36**, 657–72. [p. 30.]

Hurley, D. G. (1970). Internal waves in a wedge-shaped region. *J. Fluid Mech.* **43**, 97–120. [p. 30.]

Imberger, J. (1972). Two dimensional sink flow of a stratified fluid contained in a duct. *J. Fluid Mech.* **53**, 329–49. [p. 89.]

Ippen, A. T. (1966). *Estuary and coastline hydrodynamics*. New York: McGraw-Hill. [p. 74.]

Ippen, A. T. and Harleman, D. R. F. (1952). Steady-state characteristics of subsurface flow. *Proc. NBS Symp. on Gravity Waves, Nat. Bur. Stand. Circ.* **521**, 79–93. [p. 112.]

Iselin, C. O'D. (1939). The influence of vertical and lateral turbulence on the characteristic of the waters at mid-depths. *Trans. Amer. Geophys. Union 1939*, 414–17. [p. 316.]

Izumi, Y. (1964). The evolution of temperature and velocity profiles during breakdown of a nocturnal inversion and a low-level jet. *J. Appl. Meteor.* **3**, 70–82. [p. 308.]

Jakob, M. (1957). *Heat transfer*. New York: John Wiley. [p. 250.]

Janowitz, G. S. (1968). On wakes in stratified fluids. *J. Fluid Mech.* **33**, 417–32. [p. 85.]

Jeffreys, H. (1926). The stability of a layer of fluid heated from below. *Phil. Mag.* **2**, 833–44. [p. 210.]

Jeffreys, H. (1928). Some cases of instability in fluid motion. *Proc. Roy. Soc.* A **118**, 195–208. [p. 210.]

Johns, B. and Cross, M. J. (1970). The decay and stability of internal wave modes in a multisheeted thermocline. *J. Marine Res.* **28**, 215–24. [p. 330.]

Johnson, M. A. (1963). Turbidity currents. *Sci. Prog.* **198**, 257–73. [p. 178.]

Kármán, T. von (1940). The engineer grapples with non-linear problems. *Bull. Am. Math. Soc.* **46**, 615–83. [pp. 71, 73.]

Kato, H. and Phillips, O. M. (1969). On the penetration of a turbulent layer into a stratified fluid. *J. Fluid Mech.* **37**, 643–55. [pp. 293, 297.]

Kelly, R. E. (1968). On the resonant interaction of neutral disturbances in two inviscid shear flows. *J. Fluid Mech.* **31**, 789–99. [p. 124.]

Keulegan, G. H. (1949). Interfacial instability and mixing in stratified flows. *J. Res. Nat. Bur. Stand.* **43**, 487–500. [p. 107.]

Keulegan, G. H. (1953). Characteristics of internal solitary waves. *J. Res. Nat. Bur. Stand.* **51**, 133–40. [p. 53.]

Keulegan, G. H. (1957). Form characteristics of arrested saline wedges. *Nat. Bur. Stand. Rept. 5482*. [p. 75.]

Keulegan, G. H. (1958). The motion of saline fronts in still water. *Nat. Bur. Stand. Rept. 5831*. [p. 72.]

Keulegan, G. H. and Carpenter, L. H. (1961). An experimental study of internal progressive oscillatory waves. *Nat. Bur. Stand. Rept. 7319*. [pp. 44, 50, 123.]

Kitaigorodskii, S. A. (1960). On the computation of the thickness of the wind-mixing layer in the ocean. *Bull. Acad. Sci. U.S.S.R. Geophys. Ser.* **3**, 284–7. [p. 301.]

Kitaigorodskii, S. A. and Miropol'kii, Yu. Z. (1970). On the theory of the open-ocean active layer. *Bull. Acad. Sci. U.S.S.R. Atmos. and Oceanic Phys.* **6**, 97–102. [p. 334.]

Klug, W. (1968). Diffusion in the atmospheric surface layer: comparison of similarity theory with observations. *Quart. J. Roy. Met. Soc.* **94**, 555–62. [p. 140.]

Koh, R. C. Y. (1966). Viscous stratified flow towards a sink. *J. Fluid Mech.* **24**, 555–75. [pp. 87, 89.]

Koschmieder, E. L. (1967). On convection under an air surface. *J. Fluid Mech.* **30**, 9–15. [p. 216.]

Kraichnan, R. H. (1962). Turbulent thermal convection at arbitrary Prandtl number. *Phys. Fluids*, **5**, 1374–89, [p. 214.]

Kraus, E. B. and Rooth, C. G. H. (1961). Temperature and steady state vertical heat flux in the ocean surface layers. *Tellus*, **13**, 231–8. [p. 305.]

Kraus, E. B. and Turner, J. S. (1967). A one-dimensional model of the seasonal thermocline. II. The general theory and its consequences. *Tellus*, **19**, 98–106. [p. 302.]

Krishnamurti, R. (1968). Finite amplitude convection with changing mean temperature. *J. Fluid Mech.* **33**, 445–63. [p. 217.]

Krishnamurti, R. (1970). On the transition to turbulent convection. *J. Fluid Mech.* **42**, 295–320. [pp. 218, 220.]

La Fond, E. C. (1962). Internal waves. *The Sea* (ed. M. N. Hill.) vol. 1, pp. 731–51. New York: Interscience. [p. 19.]

La Fond, E. C. (1966). Internal waves. *Encyclopedia of Oceanography* (ed. R. W. Fairbridge), pp. 402–8. New York: Reinhold. [p. 50.]

Laikhtman, D. L. (1961). *Physics of the boundary layer of the atmosphere.* English trans., U.S. Dept. Commerce, Washington. [p. 309.]

Lamb, H. (1932). *Hydrodynamics*, 6th ed. Cambridge University Press. [pp. 9, 15, 48, 94.]

Larsen, L. H. (1969*a*). Internal waves incident upon a knife edge barrier. *Deep-Sea Res.* **16**, 411–19. [p. 30.]

Larsen, L. H. (1969*b*). Oscillations of a neutrally bouyant sphere in a stratified fluid. *Deep-Sea Res.* **16**, 587–603. [pp. 31, 202.]

Lighthill, M. J. (1962). Physical interpretation of the mathematical theory of wave generation by wind. *J. Fluid Mech.* **14**, 385–98. [p. 93.]

Lighthill, M. J. and Whitham, G. B. (1955). On kinematic waves. *Proc. Roy. Soc.* A **229**, 281–317. [p. 66.]

Lilly, D. K. (1964). Numerical solutions for the shape-preserving two-dimensional thermal convection element. *J. Atmos. Sci.* **21**, 83–98. [p. 193.]

Lilly, D. K. (1968). Models of cloud-topped mixed layers under a strong inversion. *Quart. J. Roy. Met. Soc.* **94**, 292–309. [p. 309.]

Lin, S. P. (1969). Finite-amplitude stability of a parallel flow with a free surface. *J. Fluid Mech.* **36**, 113–26. [p. 113.]

Linden, P. F. (1971*a*). Salt fingers in the presence of grid-generated turbulence. *J. Fluid Mech.* **49**, 611–24. [p. 285.]

Linden, P. F. (1971 *b*). The effect of turbulence and shear on salt fingers. *Ph.D. thesis.* University of Cambridge. [pp. 278, 281, 296.]

Lloyd, J. R. and Sparrow, E. M. (1970). On the instability of natural convection flow on inclined plates. *J. Fluid Mech.* **42**, 465–70. [p. 243.]

Lock, R. C. (1951). The velocity distribution in the laminar boundary layer between parallel streams. *Quart. J. Mech. Appl. Math.* **4**, 42–63. [p. 112.]

Lofquist, K. (1960). Flow and stress near an interface between stratified liquids. *Phys. Fluids.* **3**, 158–75. [pp. 72, 182.]

Long, R. R. (1953*a*). Some aspects of the flow of stratified fluids. I. A theoretical investigation, *Tellus*, **5**, 42–57. [p. 55.]

Long, R. R. (1953*b*). A laboratory model resembling the 'Bishop-wave' phenomenon. *Bull. Amer. Met. Soc.* **34**, 205–11. [pp. 68, 125.]

Long, R. R. (1954). Some aspects of the flow of stratified fluids. II. Experiments with a two-fluid system. *Tellus*, **6**, 97–115. [pp. 65, 68.]

Long, R. R. (1955). Some aspects of the flow of stratified fluids. III. Continuous density gradients. *Tellus*, **7**, 342–57. [p. 58.]

Long, R. R. (1959). The motion of fluids with density stratification. *J. Geophys. Res.* **64**, 2151–63. [p. 84.]

Long, R. R. (1962). Velocity concentrations in stratified fluids. *J. Hydr. Div., Amer. Soc. Civil Eng.*, **88**, HY1, 9–26. [p. 88.]

Long, R. R. (1965). On the Boussinesq approximation and its role in the theory of internal waves. *Tellus*, **17**, 46–52. [p. 53.]

Long, R. R. (1970). A theory of turbulence in stratified fluids. *J. Fluid Mech.* **42**, 349–65. [p. 317.]

Ludlam, F. H. (1967). Characteristics of billow clouds and their relation to clear-air turbulence. *Quart. J. Roy. Met. Soc.* **93**, 419–35. [p. 106.]

Lumley, J. L. (1964). The spectrum of nearly inertial turbulence in a stably stratified fluid. *J. Atmos. Sci.* **21**, 99–102. [p. 144.]

Lumley, J. L. and Panofsky, H. A. (1964). *The structure of atmospheric turbulence.* New York: Interscience. [p. 139.]

Lyra, G. (1943). Theorie der stationären Leewellenstromung in freier Atmosphäre. *Z. agnew. Math. Mech.* **23**, 1–28. [p. 34.]

Macagno, E. O. and Rouse, H. (1961). Interfacial mixing in stratified flow. *J. Eng. Mech. Div., Amer. Soc. Civil Eng.* **87**, EM 5, 55–81. [p. 156.]

Malkus, W. V. R. (1954*a*). Discrete transitions in turbulent convection. *Proc. Roy. Soc.* A **225**, 185–95. [p. 219.]

Malkus, W. V. R. (1954*b*). The heat transport and spectrum of thermal turbulence. *Proc. Roy. Soc.* A **225**, 196–212. [pp. 214, 220.]

Malkus, W. V. R. and Veronis, G. (1958). Finite amplitude cellular convection. *J. Fluid Mech.* **4**, 225–60. [pp. 212, 238.]

Martin, S. (1966). The slow motion of a finite flat plate through a viscous stratified fluid. *Johns Hopkins, Dept. of Mechanics ONR Tech. Rept. no. 21.* [pp. 83, 86.]

Martin, S. and Long, R. R. (1968). The slow motion of a plate through a viscous stratified fluid. *J. Fluid Mech.* **31**, 669–88. [pp. 82, 85.]

Martin, S., Simmons, W. F. and Wunsch, C. (1969). Resonant internal wave interactions. *Nature*, **224**, 1014–15. [p. 45.]

Maslowe, S. A. and Thompson, J. M. (1971). Stability of a stratified free shear layer. *Phys. Fluids*, **14**, 453–8. [p. 104.]

McEwan, A. D. (1971). Degeneration of resonantly-excited standing internal gravity waves. *J. Fluid. Mech.* **50**, 431–48. [pp. 46, 328, 330.]

McIntyre, M. E. (1972). On Long's hypothesis of no upstream influence in uniformly stratified or rotating flow. *J. Fluid Mech.* **52**, 209–43. [p. 57.]

Middleton, G. V. (1966). Experiments on density and turbidity currents. 1. Motion of the head. *Canad. J. Earth Sci.* **3**, 523–46. [p. 70.]

Miles, J. W. (1957). On the generation of surface waves by shear flows. *J. Fluid Mech.* **3**, 185–204. [p. 93.]

Miles, J. W. (1961). On the stability of heterogeneous shear flows. *J. Fluid Mech.* **10**, 496–508. [p. 100.]

Miles, J. W. (1963). On the stability of heterogeneous shear flows. Part 2. *J. Fluid Mech.* **16**, 209–27. [p. 100.]

Miles, J. W. (1968*a*). Lee waves in a stratified flow. Part 1. Thin barrier. *J. Fluid Mech.* **32**, 549–68. [p. 59.]

Miles, J. W. (1968*b*). Lee waves in stratified flow. Part 2. Semicircular obstacle. *J. Fluid Mech.* **33**, 803–14. [p. 59.]

Miles, J. W. (1969). Waves and wave drag in stratified flows. In *Proc. twelfth Int. Congress Applied Mechanics, Stanford* (eds. M. Hetenyi and W. G. Vincenti). Berlin: Springer–Verlag. [p. 59.]

Miles, J. W. and Howard, L. N. (1964). Note on a heterogeneous shear flow. *J. Fluid Mech.* **20**, 331–6. [p. 97.]

Miles, J. W. and Huppert, H. E. (1969). Lee waves in a stratified flow. Part 4. Perturbation approximations. *J. Fluid Mech.* **35**, 497–525. [pp. 59, 62.]

Mittendorf, G. H. (1961). The instability of stratified flow. *M.Sc. thesis*. State University of Iowa. [p. 156.]

Monin. A. S. (1959). Smoke propagation in the surface layer of the atmosphere. *Advances in Geophysics*, **6**, 331–44. [p. 140.]

Monin, A. S. (1962*a*). Empirical data on turbulence in the surface layer of the atmosphere. *J. Geophys. Res.* **67**, 3103–9. [pp. 132, 139.]

Monin, A. S. (1962*b*). On the turbulence spectrum in a stratified atmosphere. *Bull. Acad. Sci. U.S.S.R. Geophys. Series*, **3**, 266–71. [p. 141.]

Monin, A. S. (1965). On the symmetry properties of turbulence in the surface layer of air. *Bull. Acad. Sci. U.S.S.R. Atmos. and Oceanic Phys.* **1**, 25–30. [pp. 148, 150.]

Monin, A. S. and Obukov, A. M. (1954). Basic laws of turbulent mixing in the ground layer of the atmosphere. *Acad. Sci. U.S.S.R. Leningrad Geophys. Inst.* **24**, 163–87. [p. 131.]

Moore, M. J. and Long, R. R. (1971). An experimental investigation of turbulent stratified shearing flow. *J. Fluid Mech.* **49**, 635–55. [p. 295.]

Mortimer, C. H. (1952). Water movements in lakes during summer stratification: evidence from the distribution of temperature in Windermere. *Phil. Trans. Roy. Soc.* B **236**, 355–404. [p. 21.]

Morton, B. R. (1956). Buoyant plumes in a moist atmosphere. *J. Fluid Mech.* **2**, 127–44. [p. 196.]

Morton, B. R. (1959*a*). Forced plumes. *J. Fluid Mech.* **5**, 151–63. [pp. 173, 200.]

Morton, B. R. (1959*b*). The ascent of turbulent forced plumes in a calm atmosphere. *Int. J. Air Poll.* **1**, 184–97. [p. 173.]

Morton, B. R. (1960). Laminar convection in uniformly heated vertical pipes. *J. Fluid Mech.* **8**, 227–40. [p. 240.]

Morton, B. R. (1968). Turbulent structure in cumulus models. *Int. Conf. on Cloud Physics, Toronto Aug. 1968.* [p. 171.]

Morton, B. R., Taylor, Sir Geoffrey and Turner, J. S. (1956). Turbulent gravitational convection from maintained and instantaneous sources. *Proc. Roy. Soc.* A **234**, 1–23. [pp. 171, 197, 200.]

Mowbray, D.E. and Rarity, B. S. H. (1967). A theoretical and experimental investigation of the phase configuration of internal waves of small amplitude in a density stratified liquid. *J. Fluid Mech.* **28**, 1–16. [pp. 24, 29.]

Munk, W. H. (1966). Abyssal recipes. *Deep-Sea Res.* **13**, 707–30. [pp. 316, 331.]

Musman, S. (1968). Penetrative convection. *J. Fluid Mech.* **31**, 343–60. [p. 238.]

Myrup, L. O. (1968). Atmospheric measurements of the buoyant subrange of turbulence. *J. Atmos. Sci.* **25**, 1160–4. [p. 144.]

Neal, V. T., Neshyba, S. and Denner, W. (1969). Thermal stratification in the Arctic Ocean. *Science*, **166**, 373–4. [p. 270.]

Nichol, C. I. H. (1970). Some dynamical effects of heat on a turbulent boundary layer. *J. Fluid Mech.* **40**, 361–84. [p. 155.]

Nield, D. A. (1964). Surface tension and buoyancy effects in cellular convection. *J. Fluid Mech.* **19**, 341–52. [p. 217.]

Nield, D. A. (1967). The thermohaline Rayleigh–Jeffreys problem. *J. Fluid Mech.* **29**, 545–58. [pp. 253, 263.]

Ogura, Y. (1963). The evolution of a moist convective element in a shallow, conditionally unstable atmosphere: a numerical calculation. *J. Atmos. Sci.* **20**, 407–24. [p. 196.]

Okamoto, M. and Webb, E. K. (1970). The temperature fluctuations in stable stratification. *Quart. J. Roy. Met. Soc.* **96**, 591–600. [p. 155.]

Oke, T. R. (1970). Turbulent transport near the ground in stable conditions. *J. Appl. Met.* **9**, 778–86. [p. 137.]

Okubo, A. (1968). Some remarks on the importance of the 'shear effect' on horizontal diffusion. *J. Ocean. Soc. Japan*, **24**, 60–9. [p. 317.]

Okubo, A. (1970). Oceanic mixing. *Chesapeake Bay Inst. Tech. Rept. no. 62*, Johns Hopkins University. [p. 317.]

Orlanski, I. and Bryan, K. (1969). Formation of the thermocline step structure by large-amplitude internal gravity waves. *J. Geophys. Res.* **74**, 6975–83. [p. 329.]

Ostrach, S. (1964). Laminar flows with body forces. In *Theory of laminar flows* (ed. F. K. Moore). Princeton University Press. [p. 242.]

Ozmidov, R. V. (1965*a*). Energy distribution between oceanic motions of different scales. *Bull. Acad. Sci. U.S.S.R. Atmos. and Oceanic Phys.* **1**, 257–61. [p. 142.]

Ozmidov, R. V. (1965*b*). On the turbulent exchange in a stably stratified ocean. *Bull. Acad. Sci. U.S.S.R. Atmos. and Oceanic. Phys.* **1**, 493–7. [p. 143.]

Pao, Y-H. (1968*a*). Laminar flow of a stably stratified fluid past a plate. *J. Fluid Mech.* **34**, 795–808. [p. 85.]

Pao, Y-H. (1968*b*). Undulance and turbulence in stably stratified media. *Symposium on clear air turbulence and its detection*, Seattle, Washington. [p. 151.]

Pao, Y-H. (1969). Inviscid flows of stably stratified fluids over barriers. *Quart. J. Roy. Met. Soc.* **95**, 104–19. [p. 59.]

Pearce, R. P. and White, P. W. (1967). Lee wave characteristics derived from a three layer model. *Quart. J. Roy. Met. Soc.* **93**, 155–65. [p. 35.]

Pearson, J. R. A. (1958). On convection cells induced by surface tension. *J. Fluid Mech.* **4**, 489–500. [p. 217.]

Pellew, A. and Southwell, R. V. (1940). On maintained convective motion in a fluid heated from below. *Proc. Roy. Soc.* A **176**, 312–43. [p. 211.]

Phillips, A. C. and Walker, G. T. (1932). The forms of stratified clouds. *Quart. J. Roy. Met. Soc.* **58**, 23–30. [p. 216.]

Phillips, O. M. (1960). On the dynamics of unsteady gravity waves of finite amplitude. *J. Fluid Mech.* **9**, 193–217. [p. 41.]

Phillips, O. M. (1966*a*). *The dynamics of the upper ocean.* Cambridge University Press. (2nd ed. 1977.) [pp. 2, 6, 17, 46, 120, 141, 310, 332.]

Phillips, O. M. (1966*b*). On turbulent convection currents and the circulation of the Red Sea. *Deep-Sea Res.* **13**, 1149–60. [pp. 163, 287.]

Phillips, O. M. (1968). The interaction trapping of internal gravity waves. *J. Fluid Mech.* **34**, 407–16. [p. 45.]

Phillips, O. M. (1970). On flows induced by diffusion in a stably stratified fluid. *Deep-Sea Res.* **17**, 435–43. [p. 244.]

Phillips, O. M. (1971). On spectra measured in an undulating layered medium. *J. Phys. Oceanog.* **1**, 1–6. [p. 21.]

Phillips, O. M., George, W. K. and Mied, R. P. (1968). A note on the interaction between internal gravity waves and currents. *Deep-Sea Res.* **15**, 267–73. [p. 45.]

Pillow, A. F. (1952). The free convection cell in two dimensions. *Rep. Aero. Res. Lab., Melbourne*, A79. [p. 246.]

Pingree, R. D. (1971). Analysis of the temperature and salinity small-scale structure in the region of the Mediterranean influence in the N.E. Atlantic. *Deep-Sea Res.* **18**, 485–91. [pp. 273, 317.]

Polymeropoulos, C. E. and Gebhart, B. (1967). Incipient instability in free convection laminar boundary layers. *J. Fluid Mech.* **30**, 225–39. [p. 242.]

Prandtl, L. (1952). *Essentials of fluid dynamics.* London: Blackie. [pp. 7, 23, 73, 129, 240, 243.]

Priestley, C. H. B. (1953). Buoyant motion in a turbulent environment. *Aust. J. Phys.* **6**, 279–90. [p. 203.]

Priestley, C. H. B. (1956). A working theory of the bent-over plume of hot gas. *Quart. J. Roy. Met. Soc.* **82**, 165–76. [p. 205.]

Priestley, C. H. B. (1959). *Turbulent transfer in the lower atmosphere.* University of Chicago Press. [pp. 127, 199, 203, 230, 234.]

Priestley, C. H. B. and Ball, F. K. (1955). Continuous convection from an isolated source of heat. *Quart. J. Roy. Met. Soc.* **81**, 144–57. [p. 199.]

Proudman, J. (1953). *Dynamical Oceanography.* London: Methuen. [p. 21.]

Prych, E. A., Harty, F. R. and Kennedy, J. F. (1964). Turbulent wakes in density stratified fluids of finite extent. *MIT Hydrodynamics Laboratory Report no. 65*. [p. 152.]

Queney, P. (1941). Ondes de gravité produites dans un courant aérien par une petite chaîne de montagnes. *Comptes Rendus*, **213**, 588–91. [pp. 34, 36.]

Queney, P. (1948). The problem of air flow over mountains: a summary of theoretical studies. *Bull. Amer. Meteor. Soc.* **29**, 16–26. [p. 34.]

Rarity, B. S. H. (1967). The two-dimensional wave pattern produced by a disturbance moving in an arbitrary direction in a density stratified liquid. *J. Fluid Mech.* **30**, 329–36. [p. 31.]

Rayleigh, Lord (1916). On convection currents in a horizontal layer of fluid when the higher temperature is on the under side. *Phil. Mag.* (6) **32**, 529–46. [p. 210.]

Richards, J. M. (1963). Experiments on the motions of isolated cylindrical thermals through unstratified surroundings. *Intern. J. Air Water Poll.* **7**, 17–34. [p. 192.]

Richardson, L. F. (1920). The supply of energy from and to atmospheric eddies. *Proc. Roy. Soc.* A **97**, 354–73. [p. 12.]

Ricou, F. P. and Spalding, D. B. (1961). Measurements of entrainment by axisymmetric turbulent jets. *J. Fluid Mech.* **11**, 21–32. [p. 173.]

Riehl, H., Yeh, T. C., Malkus, J. S. and La Seur, N. E. (1951). The north-east trade of the Pacific ocean. *Quart. J. Roy. Met. Soc.* **77**, 598–626. [p. 309,]

Rosenhead, L. (1931). The formation of vortices from a surface of discontinuity. *Proc. Roy. Soc.* A **134**, 170–92. [p. 96.]

Rossby, H. T. (1969). A study of Bénard convection with and without rotation. *J. Fluid Mech.* **36**, 309–35. [pp. 218, 229.]

Rouse, H. (1956). Seven exploratory studies in hydraulics 1. Development of the non-circulatory waterspout. *J. Hydr. Div. ASCE*, **82**, 1038–3 to 1038–7. [p. 77.]

Rouse, H. and Dodu, J. (1955). Turbulent diffusion across a density discontinuity. *La Houille Blanche*, **10**, 530–2. [pp. 289, 295.]

Rouse, H., Yih, C.-S. and Humphreys, H. W. (1952). Gravitational convection from a boundary source. *Tellus*, **4**, 201–10. [pp. 168, 177.]

Sandstrom, H. (1969). Effect of topography on propagation of waves in stratified fluids. *Deep-Sea Res.* **16**, 405–10. [p. 30.]

Sani, R. L. (1965). On finite amplitude roll cell disturbances in a fluid layer subjected to a heat and mass transfer. *Am. Inst. Chem. Eng. J.* **11**, 971–80. [p. 259.]

Sawyer, J. S. (1960). A numerical calculation of the displacements of a stratified airstream crossing a ridge of small height. *Quart. J. Roy. Met. Soc.* **86**, 326–45. [p. 36.]

Schlichting, H. (1935). Turbulenz bei Wärmeschichtung. *Z. angew. Math. Mech.* **15**, 313–38. [p. 110.]

Schlüter, A., Lortz, D. and Busse, F. (1965). On the stability of steady finite amplitude convection. *J. Fluid Mech.* **23**, 129–44. [p. 213.]

Schmidt, R. J. and Milverton, S. W. (1935). On the instability of a fluid when heated from below. *Proc. Roy. Soc.* A **152**, 586–94. [p. 216.]

Schmidt, R. J. and Saunders, O. A. (1938). On the motion of a fluid heated from below. *Proc. Roy. Soc.* A **165**, 216–28. [p. 216.]

Schooley, A. H. and Stewart, R. W. (1963). Experiments with a self-propelled body submerged in a fluid with a vetical density gradient. *J. Fluid Mech.* **15**, 83–96. [p. 151.]

Schwarzschild, M. and Härm, R. (1958). Evolution of very massive stars. *Astrophys. J.* **128**, 348–60. [p. 279.]

Scorer, R. S. (1949). Theory of waves in the lee of mountains. *Quart. J. Roy. Met. Soc.* **75**, 41–56. [p. 35.]

Scorer, R. S. (1954). Theory of airflow over mountains. III. Airstream characteristics. *Quart. J. Roy. Met. Soc.* **80**, 417–28. [p. 35.]

Scorer, R. S. (1957). Experiments on convection of isolated masses of buoyant fluid. *J. Fluid Mech.* **2**, 583–94. [p. 188.]

Scorer, R. S. and Wilson, S. D. R. (1963). Secondary instability in steady gravity waves. *Quart. J. Roy. Met. Soc.* **89**, 532–9. [p. 125.]

Scotti, R. S. and Corcos, G. M. (1969). Measurements on the growth of small disturbances in a stratified shear layer. *Radio Science*, **4**, 1309–13. [p. 102.]

Shirtcliffe, T. G. L. (1967). Thermosolutal convection: observation of an overstable mode. *Nature*, **213**, 489–90. [p. 262.]

Shirtcliffe, T. G. L. (1969*a*). An experimental investigation of thermosolutal convection at marginal stability. *J. Fluid Mech.* **35**, 677–88. [p. 262].

Shirtcliffe, T. G. L. (1969*b*). The development of layered thermosolutal convection. *Int. J. Heat. Mass Transfer*, **12**, 215–22. [p. 265.]

Shirtcliffe, T. G. L. (1972). Colour–Schlieren observations of double-diffusive interfaces. *J. Fluid Mech.* (in the press). [p. 282.]

Shirtcliffe, T. G. L. and Turner, J. S. (1970). Observations of the cell structure of salt fingers. *J. Fluid Mech.* **41**, 707–19. [pp. 282, 284.]

Silveston, P. L. (1958). Wärmedurchgang in waagerechten Flüssigkeitsschichten. *Forsch. a.d. Geb. des. Ingen.* **24**, 29–32 and 59–69. [pp. 219, 223.]

Simmons, W. F. (1969). A variational method for weak resonant wave interactions. *Proc. Roy. Soc.* A **309**, 551–75. [p. 41.]

Simpson, J. E. (1969). A comparison between laboratory and atmospheric density currents. *Quart. J. Roy. Met. Soc.* **95**, 758–65. [pp. 74, 106.]

Simpson, J. H. and Woods, J. D. (1970). Temperature microstructure in a fresh water thermocline. *Nature*, **226**, 832–5. [p. 315.]

Slawson, P. R. and Csanady, G. T. (1967). On the mean path of buoyant, bent-over chimney plumes. *J. Fluid Mech.* **28**, 311–22. [p. 205.]

Sparrow, E. M., Husar, R. B. and Goldstein, R. J. (1970). Observations and other characteristics of thermals. *J. Fluid Mech.* **41**, 793–800. [p. 229.]

Spiegel, E. A. (1969). Semiconvection. *Comments on Astrophys. Space Phys.* **1**, 57–61. [p. 279.]

Spiegel, E. A. and Veronis, G. (1960). On the Boussinesq approximation for a compressible fluid. *Astrophys. J.* **131**, 442–7. [p. 9.]

Squires, P. and Turner, J. S. (1962). An entraining jet model for cumulonimbus updraughts. *Tellus*, **14**, 422–34. [p. 196.]

Stern, M. E. (1960). The 'salt fountain' and thermohaline convection. *Tellus*. **12**, 172–5. [pp. 253, 258.]

Stern, M. E. (1969). Collective instability of salt fingers. *J. Fluid Mech.* **35**, 209–18. [p. 284.]

Stern, M. E. and Turner, J. S. (1969). Salt fingers and convecting layers. *Deep-Sea Res.* **16**, 497–511. [pp. 267, 281.]

Stevenson, T. N. (1968). Some two-dimensional internal waves in a stratified fluid. *J. Fluid Mech.* **33**, 715–20. [p. 31.]

Stewart, R. W. (1959). The problem of diffusion in a stratified fluid. *Adv. in Geophysics*, **6**, 303–11. [p. 146.]

Stewart, R. W. (1969). Turbulence and waves in a stratified atmosphere. *Radio Science*, **4**, 1269–78. [pp. 137, 316, 320, 335.]

Stokes, G. G. (1847). On the theory of oscillatory waves. *Trans. Camb. Phil. Soc.* **8**, 441–55. [p. 1.]

Stommel, H. (1962). On the smallness of sinking regions in the ocean. *Proc. Nat. Acad. Sci. Washington*, **48**, 766–72. [p. 231.]

Stommel, H. and Fedorov, K. N. (1967). Small scale structure in temperature and salinity near Timor and Mindanao. *Tellus*, **19**, 306–25. [p. 273.]

Stommel, H., Arons, A. B. and Blanchard, D. (1956). An oceanographical curiosity: the perpetual salt fountain. *Deep-Sea Res.* **3**, 152–3. [p. 252.]

Tait, R. I. and Howe, M. R. (1968). Some observations of thermohaline stratification in the deep ocean. *Deep-Sea Res.* **15**, 275–80. [p. 271.]

Tait, R. I. and Howe, M. R. (1971). Thermohaline staircase. *Nature*, **231**, 178–9. [p. 272.]

Taylor, G. I. (1931*a*). Effect of variation of density on the stability of superposed streams of fluid. *Proc. Roy. Soc.* A **132**, 499–523. [p. 97.]

Taylor, G. I. (1931*b*). Internal waves and turbulence in a fluid of variable density. *Conseil Perm. Int. pour. l'Expl. de la Mer., Rapp. et Proc-Verb*, **76**, 35–42. [pp. 157, 161.]

Taylor, G. I. (1954). The dispersion of matter in turbulent flow through a pipe. *Proc. Roy. Soc.* A **223**, 446–68. [p. 162.]

Taylor, G. I. (1958). Flow induced by jets. *J. Aero./Space Sci.* **25**, 464–5. [p. 170.]

Telford, J. W. (1966). The convective mechanism in clear air. *J. Atmos. Sci.* **23**, 652–66. Also discussion by B. R. Morton, and author's reply, *ibid.* **25**, 135–9. [p. 171.]

Telford, J. W. (1970). Convective plumes in a convective field. *J. Atmos. Sci.* **27**, 347–58. [pp. 171, 231.]

Thomas, D. B. and Townsend, A. A. (1957). Turbulent convection over a heated horizontal surface. *J. Fluid Mech.* **2**, 473–92. [p. 220.]

Thompson, S. M. (1969). Turbulent interfaces generated by an oscillating grid in a stably stratified fluid. *Ph.D. thesis*, University of Cambridge. [p. 290.]

Thorpe, S. A. (1966*a*). Internal gravity waves, *Ph.D. thesis*. University of Cambridge. [p. 125.]

Thorpe, S. A. (1966*b*). On wave interactions in a stratified fluid. *J. Fluid. Mech.* **24**, 737–51. [pp. 42, 44.]

Thorpe, S. A. (1968*a*). On standing internal gravity waves of finite amplitude. *J. Fluid Mech.* **32**, 489–528. [pp. 24, 30, 49, 123.]
Thorpe, S. A. (1968*b*). A method of producing a shear flow in a stratified fluid. *J. Fluid Mech.* **32**, 693–704. [p. 103.]
Thorpe, S. A. (1968*c*). On the shape of progressive internal waves. *Phil. Trans.* A **263**, 563–614. [pp. 44, 49, 52, 55.]
Thorpe, S. A. (1969*a*). Neutral eigensolutions of the stability equation for stratified shear flow. *J. Fluid Mech.* **36**, 673–83. [p. 115.]
Thorpe, S. A. (1969*b*). Experiments on the instability of stratified shear flows: immiscible fluids. *J. Fluid Mech.* **39**, 25–48. [p. 104.]
Thorpe, S. A. (1969*c*). Experiments on the stability of stratified shear flows. *Radio Science*, **4**, 1327–31. [p. 103.]
Thorpe, S. A. (1971). Experiments on the instability of stratified shear flows: miscible fluids. *J. Fluid Mech.* **46**, 299–319. [pp. 103, 104.]
Thorpe, S. A., Hall, A. and Crofts, I. (1972). The internal surge in Loch Ness. *Nature*, **237**, 96–8. [pp. 20, 68.]
Thorpe, S. A., Hutt, P. K. and Soulsby, R. (1969). The effect of horizontal gradients on thermohaline convection. *J. Fluid Mech.* **38**, 375–400. [p. 268.]
Townsend, A. A. (1956). *The structure of turbulent shear flow.* Cambridge University Press. (2nd ed. 1976.) [p. 127.]
Townsend, A. A. (1957). Turbulent flow in a stably stratified atmosphere. *J. Fluid Mech.* **3**, 361–72. [p. 154.]
Townsend, A. A. (1958). The effects of radiative transfer on turbulent flow of a stratified fluid. *J. Fluid Mech.* **4**, 361–75. [p. 146.]
Townsend, A. A. (1959). Temperature fluctuations over a heated horizontal surface. *J. Fluid Mech.* **5**, 209–41. [pp. 214, 220, 226, 250.]
Townsend, A. A. (1962). Natural convection in the earth's boundary layer. *Quart. J. Roy. Met. Soc.* **88**, 51–6. [pp. 134, 136, 214.]
Townsend, A. A. (1964). Natural convection in water over an ice surface. *Quart. J. Roy. Met. Soc.* **90**, 248–59. [pp. 236, 238.]
Townsend, A. A. (1965). Excitation of internal waves by a turbulent boundary layer. *J. Fluid Mech.* **22**, 241–52. [pp. 237, 311.]
Townsend, A. A. (1966). Internal waves produced by a convective layer. *J. Fluid Mech.* **24**, 307–19. [pp. 237, 311.]
Townsend, A. A. (1967). Wind and the formation of inversions. *Atmos. Envir.* **1**, 173–5. [p. 155.]
Townsend, A. A. (1968). Excitation of internal waves in a stably stratified atmosphere with considerable wind shear. *J. Fluid Mech.* **32**, 145–71. [pp. 237, 311.]
Townsend, A. A. (1970). Entrainment and the structure of turbulent flow. *J. Fluid Mech.* **41**, 13–46. [pp. 167, 171.]
Tritton, D. J. (1963). Transition to turbulence in the free convection boundary layers on an inclined heated plate. *J. Fluid Mech.* **16**, 417–35. [pp. 113, 243.]
Tritton, D. J. and Zarraga, M. N. (1967). Convection in horizontal layers with internal heat generation. Experiments. *J. Fluid Mech.* **30**, 21–31. [p. 217.]

Trustrum, K. (1964). Rotating and stratified fluid flow. *J. Fluid Mech.* **19**, 415–32. [p. 79.]

Tsang, G. (1970). Laboratory study of two-dimensional starting plumes. *Atmos. Envir.* **4**, 519–44. [p. 194.]

Tully, J. P. and Giovando, L. F. (1963). Seasonal temperature structure in the eastern subarctic Pacific ocean. *Marine distributions* (ed. M. J. Dunbar), pp. 10–36. Toronto: University Press. [p. 304.]

Turner, J. S. (1957). Buoyant vortex rings. *Proc. Roy. Soc.* A **239**, 61–75. [p. 189.]

Turner, J. S. (1960*a*). A comparison between buoyant vortex rings and vortex pairs. *J. Fluid Mech.* **7**, 419–32. [pp. 193, 202.]

Turner, J. S. (1960*b*). Intermittent release of smoke from chimneys. *Mech. Eng. Science*, **2**, 97–100. [p. 202.]

Turner, J. S. (1962). The starting plume in neutral surroundings. *J. Fluid Mech.* **13**, 356–68. [p. 192.]

Turner, J. S. (1963*a*). Model experiments relating to thermals with increasing buoyancy. *Quart. J. Roy. Met. Soc.* **89**, 62–74. [p. 195.]

Turner, J. S. (1963*b*). The motion of buoyant elements in turbulent surroundings. *J. Fluid Mech.* **16**, 1–16. [p. 204.]

Turner, J. S. (1964*a*). The flow into an expanding spherical vortex. *J. Fluid Mech.* **18**, 195–208. [p. 189.]

Turner, J. S. (1964*b*). The dynamics of spheroidal masses of buoyant fluid. *J. Fluid Mech.* **19**, 481–90. [p. 188.]

Turner, J. S. (1965). The coupled turbulent transports of salt and heat across a sharp density interface. *Int. J. Heat and Mass Trans.* **8**, 759–67. [pp. 274, 276.]

Turner, J. S. (1966). Jets and plumes with negative or reversing buoyancy. *J. Fluid Mech.* **26**, 779–92. [p. 175.]

Turner, J. S. (1967). Salt fingers across a density interface. *Deep-Sea Res*, **14**, 599–611. [p. 281.]

Turner, J. S. (1968*a*). The behaviour of a stable salinity gradient heated from below. *J. Fluid Mech.* **33**, 183–200. [p. 264.]

Turner, J. S. (1968*b*). The influence of molecular diffusivity on turbulent entrainment across a density interface. *J. Fluid Mech.* **33**, 639–56 [pp. 290, 296.]

Turner, J. S. (1969*a*). Buoyant plumes and thermals. *Annual Rev. Fluid Mech.* **1**, 29–44. [p. 165.]

Turner, J. S. (1969*b*). A note on wind mixing at the seasonal thermocline. *Deep-Sea Res.* Suppl. to vol. **16**, 297–300. [p. 300.]

Turner, J. S. (1972). On the energy deficiency of self-preserving convective flows. *J. Fluid Mech.* **53**, 217–26. [p. 189.]

Turner, J. S. and Kraus, E. B. (1967). A one-dimensional model of the seasonal thermocline. I. A laboratory experiment and its interpretation. *Tellus*, **19**, 88–97. [p. 302.]

Turner, J. S. and Yang, I. K. (1963). Turbulent mixing at the top of stratocumulus clouds. *J. Fluid Mech.* **17**, 212–24. [p. 237.]

Turner, J. S., Shirtcliffe, T. G. L. and Brewer, P. G. (1970). Elemental variations of transport coefficients across density interfaces in multiple-diffusive systems. *Nature*, **228**, 1083–4. [p. 278.]

Veronis, G. (1963). Penetrative convection. *Astrophys. J.* **137**, 641–63. [p. 238.]
Veronis, G. (1965). On finite amplitude instability in thermohaline convection. *J. Mar. Res.* **23**, 1–17. [pp. 253, 259.]
Veronis, G. (1966). Large amplitude Bénard convection. *J. Fluid Mech.* **26**, 49–68. [p. 225.]
Veronis, G. (1967). Analogous behaviour of homogeneous rotating fluids and stratified, non-rotating fluids. *Tellus*, **19**, 326–36. [p. 243.]
Veronis, G. (1968). Effect of a stabilizing gradient of solute on thermal convection. *J. Fluid Mech.* **34**, 315–36. [pp. 259, 277.]
Walin, G. (1964). Note on the stability of water stratified by both salt and heat. *Tellus.* **16**, 389–93. [p. 253.]
Walin, G. (1971). Contained non-homogeneous flow under gravity, or how to stratify a fluid in the laboratory. *J. Fluid Mech.* **48**, 647–72. [p. 249.]
Ward, P. R. B. and Fischer, H. B. (1971). Some limitations on use of the one-dimensional dispersion equation. *Water Resources Res.* **7**, 215–20. [p. 162.]
Warner, J. (1970). On steady-state one-dimensional models of cumulus convection. *J. Atmos. Sci.* **27**, 1035–40. [p. 196.]
Warner, J. and Telford, J. W. (1967). Convection below cloud base. *J. Atmos. Sci.* **24**, 374–82. [pp. 234, 307.]
Warren, F. W. G. (1960). Wave resistance to vertical motion in a stratified fluid. *J. Fluid Mech.* **7**, 209–29. [p. 202.]
Webb, E. K. (1970). Profile relationships: the log-linear range, and the extension to strong stability. *Quart. J. Roy. Met. Soc.* **96**, 67–90. [pp. 131, 136.]
Webster, C. A. G. (1964). An experimental study of turbulence in a density-stratified shear flow. *J. Fluid Mech.* **19**, 221–45. [p. 160.]
Webster, T. F. (1971). On the intensity of horizontal ocean currents. *Deep-Sea Res.* **18**, 885–93. [p. 332.]
Whitehead, J. A. and Chen, M. M. (1970). Thermal instability and convection of a thin fluid layer bounded by a stable region. *J. Fluid. Mech.* **40**, 549–70. [p. 238.]
Wilkinson, D. L. and Wood, I. R. (1971). A rapidly varied flow phenomenon in a two-layer flow. *J. Fluid Mech.* **47**, 241–56. [p. 182.]
Wood, I. R. (1966). Studies in unsteady self-preserving flows. Univ. of N.S.W. *Water Research Lab. Rept. no. 81.* [p. 73.]
Wood, I. R. (1968). Selective withdrawal from a stably stratified fluid. *J. Fluid Mech.* **32**, 209–23. [pp. 74, 76.]
Wood, I. R. (1970). A lock exchange flow. *J. Fluid Mech.* **42**, 671–87. [p. 76.]
Woods, J. D. (1968*a*). An investigation of some physical processes associated with vertical flow of heat through the upper ocean. *Met. Mag.* **97**, 65–72. [p. 325.]
Woods, J. D. (1968*b*). Wave-induced shear instability in the summer thermocline. *J. Fluid Mech.* **32**, 791–800. [pp. 122, 325.]
Woods, J. D. (1969). On Richardson's number as a criterion for laminar-turbulent-laminar transition in the atmosphere and ocean. *Radio Science*, **4**, 1289–98. [p. 316.]

Woods, J. D. and Wiley, R. L. (1972). Billow turbulence and ocean microstructure. *Deep-Sea Res.* **19**, 87–121. [pp. 317, 325.]

Wu, J. (1969). Mixed region collapse with internal wave generation in a density stratified medium. *J. Fluid Mech.* **35**, 531–44. [p. 152.]

Wunsch, C. (1969). Progressive internal waves on slopes. *J. Fluid Mech.* **35**, 131–44. [pp. 28, 30, 45, 125.]

Wunsch, C. (1970). On oceanic boundary mixing. *Deep-Sea Res.* **17**, 293–301. [pp. 244, 273.]

Yaglom, A. M. (1969). Horizontal turbulent transport of heat in the atmosphere and the form of the eddy diffusivity tensor. *Polish Acad. Sci., Fluid Dynamics Trans.* **4**, 801–12, [p. 150.]

Yih, C-S. (1955). Stability of two-dimensional parallel flows for three-dimensional disturbances. *Quart. Appl. Math.* **12**, 434–5. [p. 94.]

Yih, C-S. (1958). On the flow of a stratified fluid. *Proc. 3rd U.S. Nat. Cong. Appl. Mech.* 857–61. [p. 10.]

Yih, C-S. (1960). Exact solutions for steady two-dimensional flow of a stratified fluid. *J. Fluid Mech.* **9**, 161–74. [pp. 56, 58.]

Yih, C-S. (1965). *Dynamics of nonhomogeneous fluids*. New York and London: Macmillan. [pp. 6, 56, 68, 77, 79, 113.]

Zenk, W. (1970). On the temperature and salinity structure of the Mediterranean water in the north-east Atlantic. *Deep-Sea Res.* **17**, 627–32. [p. 273.]

The following references, with brief notes on their relation to the subjects discussed in the text, were added in proof to the first printing.

Arya, S. P. S. (1972). The critical condition for the maintenance of turbulence in stratified flows. *Quart. J. Roy. Met. Soc.* **98**, 264–73.

Presents wind tunnel measurements and theoretical arguments which support the idea of a critical value of K_H/K_M in stable stratification (see §§5.2.3 and 5.3.3).

Gargett, A. E. and Hughes, B. A. (1972). On the interaction of surface and internal waves. *J. Fluid Mech.* **52**, 171–91.

Gives a new explanation for the appearance of 'slicks' (fig. 2.3 pl. IV). Suggests that the increase in reflectivity may be due not to surface contaminants, but to short steep waves formed by resonant interaction (§2.4).

Gregg, M. C. and Cox, C. S. (1972). The vertical microstructure of temperature and salinity. *Deep-Sea Res.* **19**, 355–76.

Ocean microstructure measurements extending into the millimetre range. These contain evidence of both mechanical (§4.3) and double-diffusive (§8.2) mixing processes.

Huppert, H. E. and Turner, J. S. (1972). Double-diffusive convection and its implications for the temperature and salinity structure of the ocean and Lake Vanda. *J. Phys. Oceanog.* **2**, 456–61.

It is suggested that one should be cautious about applying laboratory data to poorly defined situations in the ocean. A confirmation of the relation (8.3.3) can be obtained on a larger scale, however, using observations in an Antarctic Lake.

Kullenberg, G. (1972). Apparent horizontal diffusion in a stratified vertical shear flow. *Tellus*, **24**, 17–28.

Field observations of the spread of patches of dye are interpreted using a theoretical model which combines vertical diffusion and an oscillating vertical current shear (see §5.3.4).

Martin, S., Simmons, W. and Wunsch, C. (1972). The excitation of resonant triads by single internal waves. *J. Fluid Mech.* **53**, 17–44.

An extended and up to date description of interaction experiments using travelling internal waves (§2.4.3).

Morton, B. R. (1971). The choice of conservation equations for plume models. *J. Geophys. Res.* **76**, 7409–16.

A comparison of various theories of turbulent plumes (see p. 199) which lends support to the formulation based on flux equations for mass and vertical momentum (§6.1.2).

Pochapsky, T. E. (1972). Internal waves and turbulence in the deep ocean. *J. Phys. Oceanog.* **2**, 96–103.

The author concludes on the basis of ocean measurements that most of the kinetic energy in the fluctuating components is associated with non-mixing or internal wave type motions (see §10.3.4).

Schooley, A. H. and Hughes, B. A. (1972). An experimental and theoretical study of internal waves generated by the collapse of a two-dimensional mixed region in a density gradient. *J. Fluid Mech.* **51**, 159–76.

The internal wave amplitude generated by a collapsing, initially turbulent region is well predicted using a highly idealized linear model (§5.3.1).

Scotti, R. S. and Corcos, G. M. (1972). An experiment on the stability of small disturbances in a stratified shear layer. *J. Fluid Mech.* **52**, 499–528.

This gives a more detailed description of the experiment discussed in §4.1.4. It also shows photographs of the breakdown of a subcritical flow as it passes through a contraction (see p. 96).

Simpson, J. E. (1972). Effects of the lower boundary on the head of a gravity current. *J. Fluid Mech.* **53**, 759–67.

A laboratory study of the three-dimensional structure, which supports an explanation based on the gravitational instability of the lighter fluid overrun by the nose (see fig. 3.14 pl. VI).

Spiegel, E. A. (1971). Convection in stars. I. Basic Boussinesq convection. *Ann. Rev. Astron. & Astrophys.* **9**, 323–52.

An excellent review of convection, emphasizing the theory and especially the recent numerical work referred to in §7.2.3. Part II. 'Special effects', *ibid.* **10**, 261–304, includes a discussion of double-diffusive convection.

Thomas, N. H. and Stevenson, T. N. (1972). A similarity solution for viscous internal waves. *J. Fluid Mech.* **54**, 495–506.

A theoretical description, supported by detailed experiments, of internal waves generated by a localized disturbance in a viscous fluid. (cf. figs. 2.7 and 2.11).

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