

References D

- Adler, J. 1976. The sensing of chemicals by bacteria. *Sci. Am.* **234**: 4047
- Aiello, E. & Sleigh, M.A. 1972. The metachronal wave of lateral cilia of *Mytilus edulis*. *J. Cell Biol.* **54**, 493-506.
- Anderson, J.D., Jr. 1999. A History of Aerodynamics. Cambridge University Press, New York.
- Anderson, R. A. 1975. Formation of the bacterial flagellar bundle. In Wu, T.Y., Brokaw, C.J. & Brennen, C.E., eds., 1975. *Swimming and Flying in Nature*, **1,2**. Plenum Press, New York.
- Barton, C. & Raynor, S. 1967. Analytical investigation of cilia-induced mucous flow. *Bull. Math. Biophys.* **29**, 419-28
- Berg, H.C. 1974. Dynamic properties of bacterial flagellar motors. *Nature* **249**, 77-79.
- Berg, H.C. 1975. Bacterial movement. In Wu, T.Y., Brokaw, C.J. & Brennen, C.E., eds., 1975. *Swimming and Flying in Nature*, **1,2**. Plenum Press, New York.
- Berg, H.C. & Anderson, R. A. 1973. Bacteria swim by rotating their flagellar filaments. *Nature*, **245**, 380-82.
- Blake, J.R. 1971a. A spherical envelope approach to ciliary propulsion. *J. Fluid Mech.* **46**, 199-208.
- Blake, J.R. 1971b. Infinite models for ciliary propulsion. *J. Fluid Mech.* **49**, 209-22.
- Blake, J.R. 1972. A model for the micro-structure in ciliated organisms. *J. Fluid Mech.* **55**, 1-23.
- Blake, J.R. 1973a. A finite model for ciliated microorganisms. *J. Biomech.* **6**, 133-40.
- Blake, J.R. 1973b. Flow in tubules due to ciliary activity.. *Bull. Math. Biol.* **35**, 513-23.
- Blake, J.R. 1974a. Hydrodynamic calculations on the movements of cilia and flagella. Part I. *Paramecium*. *J. Theor. Biol.* **45**, 183-203.
- Blake, J.R. 1975. On the movement of mucus in the lung. *J. Biomech.* **8**, 179-90.
- Blake, J.R. & Sleigh, M.A. 1974. Mechanics of ciliary locomotion. *Biol. Rev.* **49**, 85-125.
- Brennen, C.E. 1974. An oscillating-boundary-layer theory for ciliary propulsion. *J. Fluid Mech.* **65**, 799-824.
- Brennen, C.E. 1975. Hydromechanics of propulsion for ciliated microorganisms. In Wu, T.Y., Brokaw, C.J. & Brennen, C.E., eds., 1975. *Swimming and Flying in Nature*, **1,2**. Plenum Press, New York.
- Brennen, C.E. 1976. Locomotion of flagellates with mastigonemes. *J. Mechanochem. & Cell Motil.* **3**, 207-17.
- Brennen, C.E & Winet, H. 1977. Fluid mechanics of propulsion by cilia and flagella. *Ann. Rev. of Fluid Mech.*, **9**, 339-398.
- Brokaw, C.J. 1965. Non-sinusoidal bending waves of sperm flagella. *J. Exp. Biol.* **43**, 155-69.
- Brokaw, C.J. 1970. Bending moments on free-swimming flagella. *J. Exp. Biol.* **53**, 445-64.

- Brokaw, C.J. 1971. Bend propagation by a sliding filament model for flagella. *J. Exp. Biol.* **55**, 289-304.
- Brokaw, C.J. 1972. Computer simulation of flagellar movement. *Biophys. J.* **12**, 564-86.
- Brokaw, C.J. 1975. Spermatozoan motility: A biophysical survey. *Biol. J. Linn. Soc.* **7**, Suppl. 1, 423-39.
- Brokaw, C.J. & Gibbons, I.R. 1975. Mechanisms of movement in flagella and cilia. In Wu, T.Y., Brokaw, C.J. & Brennen, C.E., eds., 1975. *Swimming and Flying in Nature*, **1,2**. Plenum Press, New York.
- Calladine, C.R. 1974. Bacteria can swim without rotating flagellar filaments. *Nature* **249**, 385.
- Cheung, A.T.W. & Jahn, T.L. 1975. Determination of the movement, pattern of the epithelial cilia of rabbit trachea and the clearance mechanism of the tracheal muco-ciliary clearance system. In Wu, T.Y., Brokaw, C.J. & Brennen, C.E., eds., 1975. *Swimming and Flying in Nature*, **1,2**. Plenum Press, New York.
- Chwang, A.T., Winet, H. & Wu, T.Y. 1974. A theoretical mechanism for spirochetal locomotion. *J. Mechanochem. & Cell Motil.* **3**, 69-76.
- Chwang, A.T. & Wu, T.Y. 1971. A note on the helical movement of microorganisms. *Proc. Roy. Soc. London, Ser. B*, **178**, 327-46.
- Chwang, A.T., Wu, T.Y. & Winet, H. 1972. Locomotion of spirilla. *Biophys. J.* **12**, 1549-61.
- Cleveland, L.R. & Cleveland, B.T. 1966. The locomotory waves of *Koruga*, *Deltotrychonympha* and *Mixotricha*. *Arch. Protistenkd.* **109**, 39-63.
- Costello, D.P. 1973a. A new theory on the mechanics of ciliary and flagellar motility. I. Supporting observations. *Biol. Bull.* **145**, 279-91.
- Costello, D.P. 1973b. A new theory on the mechanics of ciliary and flagellar motility. II. Theoretical considerations. *Biol. Bull.* **145**, 292-309.
- DePamphilis, M.L. & Adler, J. 1971. Fine structure and isolation of the hook-basal body complex of flagella from *E.scherichia coli* and *Bacillus subtilis*. *J. Bacteriol.* **105**, 384-95.
- Dirksen, E.R. & Satir, P. 1972. Ciliary activity in the mouse oviduct as studied by transmission and scanning electron microscopy. *Tissue Cell* **4**, 389-404.
- Doetsch, R.N. 1966. Some speculations accounting for the movement of bacterial flagella. *J. Theor. Biol.* **11**, 411-17.
- Douglas, G.J. 1975. Sliding filaments in sperm flagella. *J. Theor. Biol.* **53**, 247-52.
- Dryl, S. 1975. Local microtubules interaction theory of ciliary and flagellar motion. *Bull. Acad. Polon. Sci. Ser. Sci. Biol.* **23**, 339-46.
- Eliezer, N. 1974. Viscoelastic properties of mucus. *Biorheology* **11**, 61-68.
- Fox, D.L. & Coe, W.R. J 943. Biology of the California sea-mussel (*Mytilus californianus*). *Biol. Bull.* **83**, 205-49.
- Frey-Wyssling, A. 1952. Deformation and Flow in Biological Systems. Wiley-Interscience, New York.
- Gerber, B.R. 1975. Towards a molecular mechanism for the movement of bacterial flagella. In Wu, T.Y., Brokaw, C.J. & Brennen, C.E., eds., 1975. *Swimming and Flying in Nature*, **1,2**. Plenum Press, New York.

- Gessow, A. and Myers, G.C. 1952. Aerodynamics of the Helicopter. MacMillan, New York.
- Gray, J. 1928. Cillary Movement. Cambridge Univ. Press.
- Gray, J. 1953. Undulatory propulsion. Quart. J. Microsc. Sci. **94**, 551-78.
- Gray, J. & Hancock, G.J. 1955. The propulsion of sea-urchin spermatazoa. J. Exp. Biol. **32**, 802-14.
- Grazialei, P.P.C. 1971. Olfactory mucosa of vertebrates: In Handbook of Sensory Physiology, Vol. IV, pt. 1. Olfaction, ed. L.M.Beidler. Springer, Berlin.
- Halbert, S.A., Tam, P.Y. & Blandau, R.J. 1976. Egg transport in the rabbit oviduct: The role of cilia and muscle. Science **191**, 1052-53.
- Hancock, G.J. 1953. The self-propulsion of microscopic organisms through liquids. Proc. Roy. Soc. London, Ser. A **217**, 96-121.
- Hand, W.G. & Haupt, W. 1971. Flagellar activity of the colony members of *Volvox aureus Ehrbg.* during light stimulation. J. Protozool. **18**, 361-64.
- Harris, J.E. 1961. The mechanics of ciliary movement. In The Cell and the Organism, ed. J.A. Ramsay, V.B.Wigglesworth. Cambridge Univ. Press.
- Harris, W.F. 1973. Bacterial flagella, do they rotate or do they propagate waves of bending? Protoplasma **77**, 477-79.
- Harris, W.F. & Robison, W.G. Jr. 1973. Dislocations in microtubular bundles with spermatoxon of the coccid insect *Neosteingelia texana* and evidence for slip. Nature **246**, 513-15.
- Holwill, M.E.J. 1966a. Physical aspects of flagellar movement. Physiol. Rev. **46**, 696-785.
- Holwill, M.E.J. 1966b. The motion of *Euglena viridis*: The role of the flagella. J. Exp. Biol. **44**, 578-88.
- Holwill, M.E.J. 1974. Hydrodynamic aspects of ciliary and flagellar movement. In Sleigh, M.A., ed., 1974a. Cilia and Flagella. Academic Press, New York.
- Holwill, M.E.J. & Burge, R.E. 1963. A hydrodynamic study of the motility of flagellated bacteria. Arch. Biochem. Biophys. **101**, 249-60.
- Holwill, M.E.J. & Sleigh, M.A. 1967. Propulsion by hispid flagella. J. Exp. Biol. **47**, 267-76.
- Hwang, S., Litt, M. & Forsman, W. 1969. Rheological properties of mucus. Rheol. Acta **8**, 438-48.
- Iino, T. & Mitani, M. 1966. A mutant of *Salmonella* possessing straight flagella. J. Gen. Microbiol. **49**, 81-88 .
- Jaffrin, M.Y. & Shapiro, A.H. 1971. Peristaltic pumping. Ann. Rev. Fluid Mech. **3**, 13-36.
- Jahn, T.L. 1975. New problems in propulsion of micro-organisms. In Wu, T.Y., Brokaw, C.J. & Brennen, C.E., eds., 1975. Swimming and Flying in Nature, **1,2**. Plenum Press, New York.
- Jahn, T.L., et al. 1965. Secretory activity of the oral apparatus of ciliates: Trails of adherent particles left by *Paramecium multimicronucleatum* and *Tetrahymena pyriformis*. Ann. NY Acad. Sci. **118**, 912-20.
- Jahn, T.L. & Hendrix, E.M. 1969. Locomotion of the Telotrich ciliate *Opisthontecta henneguyi*. Rev. Soc. Mex. Hist. Nat. **30**, 103-31.

- Jahn, T.L., Landman, M.D. & Fonseca, J.R. 1964. The mechanism of locomotion in flagellates. II. Function of the mastigonemes of *Ochromonas*. *J. Protozool.* **11**, 291-96.
- Jahn, T.L. & Votta, J.J. 1972. Locomotion of protozoa. *Ann. Rev. Fluid Mech.* **4**, 93-116.
- Jones, G.W. Jr. 1968. Unsteady lift forces generated by vortex shedding about a large, stationary, oscillating cylinder at high Reynolds numbers. *ASME Symp. Unsteady Flows*.
- Kaiser, G.E. & Doetsch, R.N. 1975. Enhanced translational motion of *Leptospira* in viscous environments. *Nature* **255**, 656-57.
- Katz, D.F. 1972. On the biophysics of in vivo sperm transport. PhD thesis. Univ. Calif., Berkeley.
- Katz, D.F. 1974. On the propulsion of micro-organisms near solid boundaries. *J. Fluid Mech.* **64**, 33-49.
- Keller, S.R., Wu, T.Y. & Brennen, C.E. 1975. A traction layer model for ciliary propulsion. In Wu, T.Y., Brokaw, C.J. & Brennen, C.E., eds., 1975. *Swimming and Flying in Nature*, **1,2**. Plenum Press, New York.
- Knight-Jones, E.W. 1954. Relations between metachronism and the direction of ciliary beat in metazoa. *Quart. J. Microsc. Sci.* **95**, No.4, 503-21.
- Larsen, S.H., Adler, J., Gargus, J.J. & Hogg, R.W. 1974. Chemomechanical coupling without ATP: The source of energy for motility and chemotaxis in bacteria. *Proc. Natl. Acad. Sci. USA* **71**, 1239-43.
- Lighthill, M.J. 1975. *Mathematical Biofluidynamics*. Philadelphia: SIAM.
- Litt, M. 1970. Flow behavior of mucus. *Ann. Otol. Rhinol. Laryngol.* **80**, 330-35.
- Lowy, J. & Spencer, M. 1968. Structure and function of bacterial flagella. *Symp. Soc. Exp. Biol.* **22**, 215-36.
- Lunec, J. 1975. Fluid flow induced by smooth flagella. In Wu, T.Y., Brokaw, C.J. & Brennen, C.E., eds., 1975. *Swimming and Flying in Nature*, **1,2**. Plenum Press, New York.
- Machemer, H. 1972a. Ciliary activity and the origin of metachrony in *Paramecium*; effects of increased viscosity. *J. Exp. Biol.* **57**, 239-60.
- Machemer, H. 1972b. Temperature influences on ciliary beat and metachronal coordination in *Paramecium*. *J. Mechanochem. Cell Motil.* **1**, 97-108.
- Machin, K.E. 1958. Wave propagation along flagella. *J. Exp. Biol.* **35**, 796-806.
- Macnab, R.M. & Koshland, D.E., Jr. 1972. The gradient-sensing mechanism in bacterial chemotaxis. *Proc. Natl. Acad. Sci. USA* **69**, 2509-12.
- Miller, C.E. 1966. Flow induced by mechanical analogues of mucociliary systems. *Ann. NY Acad. Sci.* **130**, 880-90.
- Miller, C.E. 1969. Streamlines, streaklines, and particle path lines associated with a mechanically-induced flow homomorphic with the mammalian mucociliary system. *Biorheology* **6**, 127-35.
- Moller, W. (1938). Experimentelle Untersuchungen zur Hydrodynamik der Kugel. *Physik. Z.*, **39**, 57-80.
- Murakami, A. & Takahashi, J. 1975. Correlation of electrical and mechanical response in nervous control of cilia. *Nature* **257**, 48-49.
- Nelson, D.J. 1975. The distribution, activity and function of the cilia of the brain. PhD thesis, Univ. Calif., Los Angeles.

- Parducz, B. 1967. Ciliary movement and coordination in ciliates. *Int. Rev. Cytol.* **21**, 91-128.
- Reese, T.S. 1965. Olfactory cilia in the frog. *J. Cell Biol.* **25**, 209-30.
- Reynolds, A.J. 1965. The swimming of minute organisms. *J. Fluid Mech.* **23**, 241-60.
- Rikmenspoel, R. 1975. Contraction model for cilia. In Wu, T.Y., Brokaw, C.J. & Brennen, C.E., eds., 1975. *Swimming and Flying in Nature*, **1,2**. Plenum Press, New York.
- Rikmenspoel, R. & Sleigh, M.A. 1970. Bending moments and elastic constant in cilia. *J. Theor. Biol.* **28**, 81-100.
- Roshko, A. 1954. On the development of turbulent wakes from vortex streets. *NACA Rep. No. 1191*.
- Ross, S.M. 1971. A wavy wall analytic model of muco-ciliary pumping. PhD thesis, Johns Hopkins Univ., Baltimore, MD.
- Ross, S.M. & Corrsin, S. 1974. Results of an analytical model of mucociliary pumping. *J. Appl. Physiol.* **37**, 333-40.
- Routledge, L.M. 1975. Bacterial flagella: Structure and function. In *Comparative Physiology-Functional Aspects of Structural Materials*, ed. L. Bolis, H.P. Maddrell, K. Schmidt-Nielsen. North-Holland, Amsterdam.
- Sad, J., Eliezer, N., Silberberg, A. & Nevo, A.C. 1970E The role of mucus in transport by cilia. *Ann. Rev. Respir. Dis.* **102**, 48-52.
- Satir, P. 1965. Studies on cilia: II. Examination of the distal region of the ciliary shaft and the role of the filaments in motility. *J. Cell Biol.* **39**, 77-94.
- Satir, P. 1968. Studies on cilia: III. Further studies on the cilium tip and a sliding filament model of ciliary motility. *J. Cell Biol.* **39**, 77-94.
- Satir, P. 1974. The present status of the sliding micro-tubule model of ciliary motion. In Sleigh, M.A., ed., 1974a. *Cilia and Flagella*. Academic Press, New York.
- Schneider, W.R. & Doetsch, R.N. 1974. Effect of viscosity on bacterial motility. *J. Bact.* **117**, 696-701.
- Schreiner, K.E. 1971. The helix as a propeller of microorganisms. *J. Biomech.* **4**, 73-83.
- Seckel, E. 2014. Stability and control of airplanes and helicopters. Academic Press.
- Shack, W.J. & Lardner, T.J. 1972. Cilia transport. *Bull. Math. Biophys.* **34**, 325-35.
- Shimada, K., Yoshida, E. & Asakura, S. 1975. Cinematographic analysis of the movement of flagellated bacteria. In Wu, T.Y., Brokaw, C.J. & Brennen, C.E., eds., 1975. *Swimming and Flying in Nature*, **1,2**. Plenum Press, New York.
- Shoesmith, J.G. 1960. The measurement of bacterial motility. *J. Gen. Microbiol.* **22**, 528-35.
- Silverman, M. & Simon, M. 1974. Flagellar rotation and the mechanism of bacterial motility. *Nature* **249**, 73-74.
- Sleigh, M.A. 1960. The form of beat in cilia of Stentor and Opalina. *J. Exp. Biol.* **37**, 1-10.
- Sleigh, M.A. 1962. *The Biology of Cilia and Flagella*. Macmillan, New York.
- Sleigh, M.A. 1966. Some aspects of the comparative physiology of cilia. *Ann. Rev. Respir. Dis.* **93** Suppl., 16-31.

- Sleigh, M.A. 1968. Patterns of ciliary beating. In *Aspects of Cell Motility*, Symp. Soc. Exp. Biol. **22**, 131-50.
- Sleigh, M.A. 1969. Coordination of the rhythm of beat in some ciliary systems. Int. Rev. Cytol. **25**, 31-54.
- Sleigh, M.A. 1971. Cilia. *Endeavour* **30**, 11-17.
- Sleigh, M.A. 1972. Features of ciliary movement of the ctenophores *Beroe*, *Pleurobrachia*, and *Cestus*. In *Essays in Hydrobiology*, ed. R.B. Clark, R.S. Wootton, 119-36. Univ. Exeter, England.
- Sleigh, M.A. 1973. *The Biology of Protozoa*. Arnold, London.
- Sleigh, M.A. 1974a. *Cilia and Flagella*. Academic Press, New York.
- Sleigh, M.A. 1974c. Patterns of movement of cilia and flagella. In Sleigh, M.A., ed., 1974a. *Cilia and Flagella*. Academic Press, New York.
- Sleigh, M.A. & Aiello, E. 1972. The movement of water by cilia. *Acta Protozool.* **9**, 265-77.
- Sleigh, M.A. & Holwill, M.E.J. 1969. Energetics of ciliary movement in *Sabellaria* and *Mytilus*. *J. Exp. Biol.* **50**, 733-44.
- Summers, K.E. & Gibbons, I.R. 1971. Adenosine triphosphate-induced sliding of tubules in trypsin-treated flagella of sea-urchin sperm. *Proc. Natl. Acad. Sci. USA* **68**, 3092-96.
- Tamm, S.L. 1972. Ciliary motion in *Paramecium*. A scanning electron microscope study. *J. Cell Biol.* **55**, 250-55.
- Tamm, S.L. & Horridge, G.A. 1970. The relation between the orientation of the central fibrils and the direction of beat in cilia of *Opalina*. *Proc. Roy. Soc. London, Ser. B*, **175**, 219-33.
- Taneda, S. (1956). Studies on wake vortices (III). Experimental investigation of the wake behind a sphere at low Reynolds number. *Rep. Res. Inst. Appl. Mech., Kyushu Univ.*, **4**, 99-105.
- Taylor, G.I. 1951. Analysis of the swimming of microscopic organisms. *Proc. Roy. Soc. London, Ser. A*, **209**, 447-61.
- Torobin, L.B. and Gauvin, W.H. (1959). Fundamental aspects of solids-gas flow. Part II. The sphere wake in steady laminar fluids. *Canadian J. Chem. Eng.*, **37**, 167-176.
- Tuck, E.O. 1968. A note on a swimming problem. *J. Fluid Mech.* **31**, 305-8.
- van Deurs, B. 1974. Spermatology of some Pycnogonida (Arthropoda) with special reference to a micro-tubule nuclear envelope complex. *Acta Zool.* **55**, 151-62.
- Wang, C. & Jahn, T.L. 1972. A theory for the locomotion of spirochetes. *J. Theor. Biol.* **36**, 53-60.
- Warner, F.D. & Satir, P. 1974. The structural basis of ciliary bend formation. Radial spoke positional changes accompanying microtubule sliding. *J. Cell Biol.* **63**, 35-63.
- Weihs, D. 1975. Some hydrodynamic aspects of fish schooling. In Wu, T.Y., Brokaw, C.J. & Brennen, C.E., eds., 1975. *Swimming and Flying in Nature*, **1,2**. Plenum Press, New York.
- Werle, H. and Gallon, M. (1972). *Aeronaut. Astronaut.*, No. 34, 21-33.
- White, F.M. 1999. *Fluid Mechanics*. McGraw-Hill, Inc.

- Winet, H. 1976. Ciliary propulsion of objects in tubes: Wall drag on swim ming *Tetrahymena* (Ciliata) in the presence of mucin and other long-chain polymers. J. Exp. Biol. **64**, 283-302.
- Winet, H. & Jones, A.R. 1975. Mucocysts in spirostomum (ciliata: heterotricha). J. Protozool. **22**, 293-96.
- Winet, H. & Keller, S.R. 1976. Spirillum swimming. Theory and observations of propulsion by the flagellar bundle. J. Exp. Biol.