

## Professor Robert McNeill Alexander, CBE, FRS.

R. McNeill Alexander - Publications

Books:

- 1967      Functional Design in Fishes Hutchinson, London.  
second and third editions 1970, 1974
- 1968      Animal Mechanics    Sidgwick & Jackson, London.  
Russian translation 1970  
second edition 1983. Blackwell, Oxford.  
Identified as a "Citation Classic" in Current Contents  
20 (16), 1989 (various editions)
- 1971      Size and Shape Edward Arnold, London.
- 1975      The Chordates Cambridge University Press, London.  
second edition 1981. Selected for the British National Corpus, 1993
- 1975      Biomechanics Chapman & Hall, London.  
Japanese translation 1976  
Spanish translation 1982
- 1977      (R.McN. Alexander & G. Goldspink, editors)  
Mechanics and Energetics of Animal Locomotion  
Chapman & Hall, London.
- 1979      The Invertebrates Cambridge University Press,  
Cambridge.  
Italian translation 1983
- 1982      Locomotion of Animals Blackie, Glasgow.
- 1982      Optima for Animals Arnold, London.  
revised edition 1996, Princeton University Press
- 1986      (editor) The Collins Encyclopaedia of Animal Biology  
Collins, London.  
Swedish translation 1987  
Japanese translation 1987
- 1986      P. Slater & R.McN. Alexander (editors)  
The Encyclopaedia of Animal Biology and Behaviour  
Grolier International.  
Italian translation 1989
- 1988      Elastic Mechanisms in Animal Movement

Cambridge University Press, Cambridge.

- 1989 Dynamics of Dinosaurs and other Extinct Giants  
Columbia University Press, New York.  
Japanese translation 1992
- 1990 Animals Cambridge University Press
- 1992 The Human Machine Natural History Museum Publications and  
Columbia University Press.
- 1992 (editor) The Mechanics of Animal Locomotion  
Springer-Verlag.
- 1992 Exploring Biomechanics : Animals in Motion Scientific American  
Library. Japanese translation 1992.
- 1994 Bones : The Unity of Form and Function Macmillan, New York and  
Weidenfeld & Nicholson, London.
- 1999 Energy for Animal Life Oxford University Press, Oxford.
- 2003 Principles of Animal Locomotion Princeton University Press

#### Multimedia CD-ROM

- 1995 How Animals Move Discovery Channel. This CD-ROM received Emma  
awards for “best natural history” and “best general reference” at the  
Frankfurt Book Fair, 1995.

#### Papers:

- 1 1951 Behaviour of the robin during laying.  
British Birds 44: 389-90.
- 2 1959 The physical properties of the swimbladder in intact Cypriniformes. J. exp. Biol. 36: 315-32.
- 3 1959 The densities of Cyprinidae. J. exp. Biol. 36: 333-40.
- 4 1959 The physical properties of the isolated swimbladder in Cyprinidae. J. exp. Biol. 36 : 341-6.
- 5 1959 The physical properties of the swimbladders of fish other than Cypriniformes. J. exp. Biol. 36: 347-55.
- 6 1961 The physical properties of the swimbladders of some South American Cypriniformes. J. exp. Biol. 38: 403-10.

- 7 1961 Visco-elastic properties of the tunica externa of the swimbladder in Cyprinidae. J. exp. Biol. 38: 747-57.
- 8 1962 The structure of the Weberian apparatus in the Cyprini. Proc.zool. Soc. Lond. 139: 451-73.
- 9 1962 Illustrations as analogues. Med. biol. Illustr. 12: 184-90.
- 10 1962 Visco-elastic properties of the body-wall of sea anemones. J.exp. Biol. 39: 373-86.
- 11 1963 Frontal foramina and tripodes of the characin Crenuchus. Nature, Lond. 200 : 1225.
- 12 1963 The evolution of the basilisk. Greece and Rome (ser.2) 10: 170-81.
- 13 1964 Visco-elastic properties of the mesogloea of jelly fish. J. exp. Biol. 41: 363-9.
- 14 1964 The structure of the Weberian apparatus in the Siluri. Proc. zool. Soc. Lond. 142: 419-40.
- 15 1964 The evolution of the Weberian apparatus in the Cobitidae. Proc. zool. Soc. Lond. 143: 177-90.
- 16 1964 Adaptation in the skulls and cranial muscles of South American characinoid fish. J. Linn. Soc. (Zool.) 45: 169-90.
- 17 1965 The lift produced by the heterocercal tails of Selachii. J. exp. Biol. 43: 131-38.
- 18 1966 Structure and function in the catfish. J. Zool., Lond. 148: 88-152.
- 19 1966 Physical aspects of swimbladder function. Biol. Rev. 41: 141-76.
- 20 1966 Rubber-like properties of the inner hinge-ligament of Pectinidae. J. exp. Biol. 44: 119-30.
- 21 1966 Lift produced by the heterocercal tail of Acipenser. Nature, Lond. 210: 1049-50.
- 22 1966 The functions and mechanisms of the protrusible upper jaws of two species of cyprinid fish. J. Zool., Lond. 149: 288-96.
- 23 1967 (G.M. Yazdani & R.McN. Alexander) Respiratory currents of flatfish. Nature, Lond. 213: 96-7.
- 24 1967 The functions and mechanisms of the protrusible upper jaws of some acanthopterygian fish. J. Zool., Lond. 151: 43-64.

- 25 1967 Mechanisms of the jaws of some atheriniform fish. J. Zool., Lond. 151: 233-55.
- 26 1969 The orientation of muscle fibres in the myomeres of fish. J. mar. biol. Ass. U.K. 49: 263-90.
- 27 1969 Mechanics of the feeding action of a cyprinid fish. J. Zool., Lond. 159: 1-15.
- 28 1970 Mechanics of the feeding action of various teleost fishes. J. Zool., Lond. 162: 145-56.
- 29 1970 Swimbladder gas secretion and energy expenditure in vertically migrating fishes. In G.B. Farquhar (edit.) Proceedings of an International Symposium on Biological Sound Scattering in the Ocean. 74-85. Department of the Navy, Washington.
- 30 1971 Anatomy and engineering. University of Leeds Review 14: 171-87.
- 31 1972 The energetics of vertical migration by fishes. Symp. Soc. exp. Biol. 26: 273-94.
- 32 1973 Muscle performance in locomotion and other strenuous activities. In L. Bolis, K. Schmidt-Nielsen & S.H.P. Maddrell (edit.) Comparative Physiology. North Holland, Amsterdam.
- 33 1973 (L.J. Calow & R.McN. Alexander) A mechanical analysis of a hind leg of a frog (Rana temporaria). J. Zool., Lond. 171: 293-321.
- 34 1973 Jaw mechanisms of the coelacanth Latimeria Copeia 1973: 156-8.
- 35 1974 The mechanics of jumping by a dog (Canis familiaris). J. Zool., Lond. 173: 549-73.
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- 37 1975 (J. Clark & R.McN. Alexander) Mechanics of running by quail (Coturnix). J. Zool., Lond. 176: 87-113.
- 38 1975 (R. McN. Alexander & A. Vernon) Mechanics of hopping by kangaroos (Macropodidae). J. Zool., Lond. 177: 265-303.
- 39 1975 (R. McN. Alexander & A. Vernon) The dimensions of knee and ankle muscles and the forces they exert. J. Human Movement Studies 1: 115-23.
- 40 1976 Mechanics of bipedal locomotion. In P. Spencer-Davies (edit.) Perspectives in experimental Biology 1: 493-504. Pergamon, Oxford.
- 41 1976 Estimates of speeds of dinosaurs. Nature, Lond. 261: 129-130.

- 42 1976 Factors affecting muscle size and structure. In D. Lister, D.N. Rhodes, V.R. Fowler & M.F. Fuller (eds.). Meat Animals, Growth and Productivity 151-157. Plenum, New York.
- 43 1976 (O. Milburn & R.McN. Alexander) The performance of the muscles involved in spitting by the archerfish, Toxotes. J. Zool., Lond. 180: 243-251.
- 44 1977 Mechanics and scaling of terrestrial locomotion. In T.J. Pedley (edit.) Scale Effects in Animal Locomotion 93-110. Academic Press, London.
- 45 1977 (T. Weis-Fogh & R. McN. Alexander) The sustained power output obtainable from striated muscle. In T.J. Pedley (edit.) Scale Effects in Animal Locomotion 511-525. Academic Press, London.
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- 47 1977 Allometry of the limbs of antelopes (Bovidae). J. Zool., Lond. 183: 125-146.
- 48 1977 (R. McN. Alexander, V.A. Langman & A.S. Jayes) Fast locomotion of some African ungulates. J. Zool., Lond. 183: 291-300.
- 49 1977 Terrestrial locomotion, Swimming and Flight. Chapters in R.McN. Alexander and G. Goldspink (eds.). Mechanics and Energetics of Animal Locomotion pages 168-203, 222-248 and 249-278. Chapman & Hall, London.
- 50 1977 The progress of animal mechanics. Ergebn. Biol. 24 : 3-11.
- 51 1977 The flight of birds. Yearbook of Science and the Future, 1978. Encyclopaedia Britannica, Inc., Chicago.
- 52 1978 (R.McN. Alexander & A.S. Jayes) Vertical movements in walking and running. J. Zool., Lond. 185: 27-40.
- 53 1978 (W.G. Cuming, R.McN. Alexander & A.S. Jayes) Rebound resilience of tendons in the feet of sheep. J. exp. Biol. 74: 75-81.
- 54 1978 (A.S. Jayes & R.McN. Alexander) Mechanics of locomotion of dogs (Canis familiaris) and sheep (Ovis aries). J. Zool., Lond. 185: 289-308.
- 55 1978 (R.McN. Alexander & A.S. Jayes) Optimum walking techniques for idealized animals. J. Zool., Lond. 186: 61-81.
- 56 1978 Fish swimming: size and shape related to energy consumption. Proc. Zodiac Symp. on Adaptation 44-47. (Centre for Agricultural Publishing and Documentation, Wageningen).
- 57 1979 (G.M.O. Maloiy, R.McN. Alexander, R. Njau & A.S. Jayes) Allometry of the legs of running birds. J. Zool., Lond. 187: 161-167.

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- 61 1980 (R.McN. Alexander, A.S. Jayes & R.F. Ker) Estimates of energy cost for quadrupedal running gaits. J. Zool., Lond. 190: 155-92.
- 62 1980 (R.McN. Alexander & A.S. Jayes) Fourier analysis of forces exerted in walking and running. J. Biomechan. 13: 383-90.
- 63 1980 Forces in animal joints. Engineering in Medicine 9: 93-7.
- 64 1980 (A.S. Jayes & R.McN. Alexander) The gaits of chelonians: walking techniques for very low speeds. J. Zool., Lond. 191: 353-78.
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- 66 1980 The mechanics of walking. In H.Y. Elder & E.R. Trueman (edits.). Aspects of animal movement 221-34. Cambridge University Press.
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- 68 1980 News and Views. Hopping and running on two legs or four. Nature 187: 187.
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- 72 1981 (R.McN. Alexander & A.S. Jayes) Estimates of the bending moments exerted by the lumbar and abdominal muscles of some mammals. J. Zool., Lond. 194: 291-303.

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- 75 1981 The gaits of tetrapods: adaptations for stability and economy. Symp. Zool. Soc. 48: 269-287.
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- 77 1981 (J.L. van Leeuwen, A.S. Jayes & R.McN. Alexander) Estimates of mechanical stresses in tortoise leg muscles during walking. J. Zool., Lond. 195: 53-69.
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- 87 1983 On the massive legs of a moa (Pachyornis elephantopus, Dinornithes). J. Zool., Lond. 201: 363-376.
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- 101 1985 The maximum forces exerted by animals. J. exp. Biol. 115: 231-238.
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