

References

for the Book

"Life at the Cell and Below-Cell Level. The Hidden History of a Fundamental Revolution in Biology"

by **Gilbert N. Ling, Ph.D.**

Pacific Press

2001

ISBN 0-9707322-0-1

(1) Schwann, T. 1839 *Mikroskopische Untersuchungen über die Übereinstimmung in der Struktur und dem Wachstum der Thiere und Pflanzen* (Berlin); republished in Ostwald's "Kassiker" (Leipzig, 1910), pp, 60-158. See also Ref. 3 for valuable review in English on Schwann's work.

(2) Dujardin, F. 1835 *Annales des sciences naturelles; partie zoologique*, 2d sér., 4:364.

(3) Hall, T.S. 1969 *Ideas of Life and Matter; Studies in the History of General Physiology 600 B.C.-1900 A.D.*, Vol 2, The University of Chicago Press, Chicago.

(4) Ledbetter, M.C. and Porter, K.R. 1970 *Introduction to the Fine Structure of Plant Cells*, Springer, New York. Dodge, J.D. 1973 *The Fine Structure of Algal Cells*, Academic Press, New York.

(5) Oken, L. 1805 *Die Zeugung* (cited by C. Singer in his *A History of Biology to About the Year 1900: A General Introduction to the Study of Living Things*, Abelard-Schuman, London.)

———. 1810 *Lehrbuch der Naturphilosophie*, Jena.

(6) von Nageli, K. 1844 *Zeitschr. wiss. Bot.* 1: 34.

(7) von Mohl, H. 1846 *Bot. Z.* 4:73, 84.

(8) Cohn, F. 1847 *Nova Acta Academiae Caesareae Leopoldino-Carolinae* [of Halle] 22: 605. For partial English transl. See Huxley, T.H., 1872, *The Contemporary Review* 19: 34.

(9) Remak, R. 1852 *Müller's Arch f. Anatomie, Physiologie, und wissenschaftliche Medizin* (Berlin) p. 49.

(10) Leydig, F. 1857 *Lehrbuch der Histologie des Menschen und der Thiere*, (Frankfurt) pp. 14-15.

(11) Schultze, M. 1861 *Müller's Archiv f. Anatomie. Physiologic und wissenschaftliche Medicin* (Berlin) p. 1. For transl. [of a part], see M. and V. Hamburger and T.S. Hall, in T.S. Hall, *A Source Book in Animal Biology* (New York. 1951, 1964),p.449.

- (12) Wilson, E.B. 1928 *The Cell in Development and Heredity*, 3rd ed. Macmillan, New York.
- (13) Glasstone, S. 1946 *Textbook of Physical Chemistry*, 2nd ed., D. Van Nostrand, New York.
- (14) van't Hoff, J.H. 1887 *Z. phys. Chem.* 1:481.
———. 1888 *Phil. Mag.* 26: 81.
- (15) Ling, G.N. 1984 *In Search of the Physical Basis of Life*, Plenum Publ. Co., New York.
- (16) Dutrochet, R. J.H. 1824 *Recherche anatomiques et physiologiques sur la structure intime des animaux et des vegetaux et sur la motilite*, (Paris).
———. 1827 *Ann. Chim et Physique.* 34:393; 35: 393.
- (17) Traube, M. 1867 *Arch. Anat. Physiol. u. wiss. Med.* 87-128; 129-165.
- (18) Pfeffer, M. F. 1877 (1st ed.) 1921 (2nd ed.) *Osmotische Untersuchungen: Studien zur Zeil-Mechanik*, Engelmann, Leipzig.
———. 1985 *Osmotic Invesigations: Studies on Cell Mechanics* (Eng. Transl. by G.R. Kepner and Ed. J. Stadelmann), Van Nostrand Reinhold, New York.
- (19) Bernstein, J. 1902 *Pflügers Arch. ges. Physiol.* 92: 521.
- (20) Donnan, F. 1911 *Z. Elektrochem.* 17: 572.
———. 1924 *Chem. Rev.* 1: 73.
- (21) Overton, E. 1899 *Vierteljahrschr. Naturforsch. Ges. Zurich* 44: 88.
- (22) Chambers, R. and Chambers, E.L. 1961 *Explorations into the Nature of the Living Cell*, Harvard Univ. Press, Cambridge, Mass. p. 9.
- (23) Ling, G.N. 1973 *Physiol. Chem. Phys.* 5: 295.
- (24) de Vries, H. 1871 *Arch. neerl. sci.* 6: 117.
- (25) Overton, E. 1902 *Pflügers Arch ges Physiol.* 92: 115.
- (26) Hamburger, H, J. 1887 *Arch. fur Anatomie und Physiologic* S 41.
———. 1889 *Z. Biol.* 26: 414.
- (27) von Hanstein, J. 1880 *Das Protoplasm als Träger des pflanzlichen und thierischen Lebensverrichtungen*, Sammlung von Vorträgen für das deutsche Volk, Heidelberg, p. 169.
- (28) de Vries, H. 1884 *Jahrb. wiss. Bot.* 14: 427.
- (29) Hofler, K. 1918 *Ber. deutsch. bot. Ges.* 36: 414.

- (30) Lucke, B. and McCutcheon, M. 1932 *Physiol. Rev.* 12: 68.
- (31) Hofler, K. 1926 *Planta* 2: 454.
———. 1930 *Jahrb. wiss. Bot.* 73: 300.
———. 1931 *Ber. dtsh. bot. Ges.* 49: 19.
———. 1932 *Protoplasma* 15: 462.
- (32) Plowe, J. Q. 1931 *Protoplasma* 12: 196, 221.
Strugger, S. 1932 *Ber. dtsh. bot. Ges.* 50: 24.
Ullrich, H. 1939 *Arch. exp. Zeilforsch.* 22: 496.
- (33) Nasonov, D. N. and Aizenberg, E. I. 1937 *Biol. zh.* (In Russian) 6: 165, see also Ref. 92, p. 48 and Ref. 86, p.111.
- (34) Kamnev, I. Ye. 1938 *Arkh. anat. gistol. i embr.* 19:145 (also Ref. 92, p. III, Ref. 86, p.115).
- (35) Ling, G.N., Neville, M.C., Will, S. and Shannon, P. 1969 *Physiol. Chem. Phys.* 1:85.
Ling, G.N., Walton, C.L. and Ochsenfeld, M.M. 1981 *J. Cell. Physiol.* 106: 385.
- (36) Gerard, P. 1912 *C.R.* 154: 1305.
Wu, H. and Yang, E.F. 1931 *Proc. Soc. Exp. Biol. Med.* 29: 248.
Kaplanskii, S. Ya. and Boldyreva, N. 1934 *Fisiol. Zh.* 17: 96.
Cohn, W. and Cohn, E. F. 1939 *Proc. Soc. Exp. Biol. Med.* 41: 445.
Heppel, L. A. 1939 *Amer. J. Physiol.* 127: 385.
Steinbach, B. 1940 *J. Biol. Chem.* 133: 695.
- (37) von Nageli, K. 1855 *Pflanzenphysiol. Untersuchungen* (C. Nägeli and C. Cramer, eds.) Hefl. I, Schulthese, Zürich.
- (38) Kuhne, W. 1864 *Untersuchungen über das Protoplasma*, Engelmann, Leipzig.
- (39) Pfeffer, Wilh. 1897 *Pflanzenphysiologie*, 2te Aufl., 2 vols., Engelmann, Leipzig.
- (40) Kite, G.L. 1913 *Biol. Bull.* 25: 1.
- (41) Lillie, R. S. 1923 *Protoplasmic Action and Nervous Action*, 1st ed., Univ. of Chicago Press, Chicago.
- (42) Cameron, I. L. 1988 *Physiol. Chem. Phys. and Med. NMR* 20: 221.
- (43) Ostwald, Wilh. 1890 *Z. physik. Chem.* 6: 71.
- (44) Boyle, P.J. and Conway, E.J. 1941 *J. Physiol.(London)* 100: 1.
- (45) Hutter, O. F. and Padsha, S. M. 1959 *J. Physiol. (London)* 146: 117.
- (46) Lorkovic, H. and Tomanek, R.J. 1977 *Amer. J. Physiol.* 232: C109.

- (47) Hodgkin, A.L. 1951 *Biol. Rev.* 26: 339.
———. 1971 *The Conduction of the Nervous Impulse*. Liverpool Univ. Press, Liverpool.
- (48) Ling, G. N. 1982 *Physiol. Chem. Phys.* 14: 47.
- (49) Ling, G. N. 1997 *Physiol. Chem. Phys. & Med. NMR* 29:123.
- (50) Netter, H. 1928 *Pflüger's Arch. ges. Physiol.* 220: 107.
- (51) Mond, R. and Amson, K. 1928 *Pflüger's Arch. Ges. Physiol.* 220: 69.
- (52) Skou, S.C. 1957 *Biochem. Biophys. Acta* 23: 394.
———. 1965 *Physiol. Rev.* 45: 596.
———. 1988 *Methods of Enzymol.* 156: 1.
———. 1989 *Biochem. Biophys. Acta* 1000: 435.
- (53) Graham, T. 1861 *Philos. Trans. Roy. Soc. (London)* 151: 183.
- (54) Williams, L. P. 1965 *Michael Faraday: A Biography*, Da Capo Press, Plenum Publ. Co., New York.
- (55) Bigelow, S. L. and Bartell, F. E. 1909 *J. Amer. Chem. Soc.* 31: 1194.
Bigelow, S.L. and Hunter, F. W. 1911 *J. Phys. Chem.* 15: 367.
Bartell, F.E. 1911 *J. Phys. Chem.* 15:318.
- (56) Findlay, A. 1919 *Osmotic Pressure*, Longmans, Green & Co., London.
- (57) L'Hermite, M. 1855 *Annales chim. phys.* 43: 420.
- (58) Pauli, W. and Rona, P. 1902 . *Beitr. Chem. Physiol. Pathol.* 1902: 114.
- (59) Bungenberg de Jong, H, G. and Kruyt, H. R. 1929 *Proc. Koninkl. Nederland. Akad. Wetenschap.*, Amsterdam 32: 849.
- (60) Glicksman, M. 1969 *Gum Technology in the Food Industry*, Academic Press, New York.
- (61) Bungenberg de Jong, H. G. 1949 in *Colloid Science, Vol. II Reversible Systems* (H.R. Kruyt, ed.) Elsevier Publ. Co., New York.
- (62) Lepeschkin, W.W. 1926 *Ber. dtsch. bot. Ges.* 44: 7.
———. 1930 *Protoplasma* 9: 269, p. 275.
- (63) Kuroda, K. 1964 in *Primitive Motile Systems in Cell Biology* (R.D. Allen and N. Kamiya eds.), Academic Press, New York, p. 31.
- (64) Gortner, R. A. 1938 *Outline of Biochemistry*, 2nd ed., John Wiley & Sons, New York.
- (65) Houwink, R. 1949 in *Colloid Science Vol. II Reversible Systems*, Elsevier

- Publ. Co., New York, pp. 19-45.
- (66) Staudinger, H. 1940 *Organische Kolloidchemie*, Braunschweig.
- (67) Staudinger, H. 1920 Ber. 53: 1073.
- (68) Ling, G. N. 1994 Physiol. Chem. Phys. & Med. NMR 26: 121.
- (69) Negendank, W. and Shaller, C. 1982 Bioch. Biophys. Acta 688: 316.
- (70) Holleman, L.W.J., Bungenberg de Jong, H. G. and Modderman, R.S.T. 1934 Kolloid Beih. 39:334.
- (71) Bungenbeg de Jong, H. G. 1932 Protoplasma 15: 110.
- (72) Huxley, T.H. 1869 "On the Physical Basis of Life", Fortnightly Review 5: 129.
- (73) Abderhalden, E. 1898 Z. physiol. Chem. 25: 65.
- (74) Ponder, E. 1948 *Hemolysis and Related Phenomena*, Grune & Stratton, New York.
- (75) Katz, J. 1896 Arch. ges. Physiol., 63: 1.
- (76) Hamburger, H.J. 1904 *Osmotische Druckund Ionenlehre*. Vol. 3, Bergmann, Wiesbaden.
- (77) Moore, B. 1906 *Recent Advances in Biochemistry* (L. Hill, ed.) Arnold, London, pp. 139-195.
Moore, B. and Roaf, H. E. 1908 Biochem. J. 3: 55.
- (78) Fischer, M. H. 1909 *Oedema*, Trans. College Physicians, 3rd Ser. Vol. 31, Philadelphia, p. 457-657.
———. 1910 *Das Oedem*, Steinkopf, Dresden.
———. 1913 *Introduction to Colloidal Physiology I. Oedema* [in Russian], Moscow, pp. 1-331.
———. 1921 *Oedema and Nephritis*, 3rd ed., Wiley, New York.
- (79) Ostwald, Wo. 1940 "Martin Fischer upon His Sixtieth Birthday" J. Med. 20: 436.
- (80) Gortner, R. A. 1930 Trans. Faraday Soc. 26: 678.
- (81) Hill, A. V. 1930 Proc. Roy. Soc. (London) Ser. B. 106: 477.
Hill, A. V. and Kupalov, P. S. 1930 Proc. Roy. Soc. (London) Ser. B. 106: 445.
- (82) McLeod, J. and Ponders, E. 1936 J. Physiol. (London) 86: 147.
Hunter, F. R. and Parpart, A. K. 1938 J. Cell. Corp. Physiol. 12: 309.
- (83) Ernst, E. 1963 *Biophysics of the Striated Muscle*, Hungar. Acad. Sci., 2nd ed., Budapest.

- (84) Macallum, A.B. 1905 *J. Physiol. (London)* 32: 95.
Menten, M. L. 1908 *Trans. Canad. Inst.* 8: 403.
- (85) Tigyí, J., Kellermayer, M. and Hazlewood C.F. 1991 *The Physical Aspect of the Living Cell*, Akad. Kiado, Budapest.
- (86) Nasonov, D. N. 1962 *Local Reaction of Protoplasm and Gradual Excitation* (English Transl. by Y.S. Halpem), National Science Foundation, available at Office of Technical Services, US. Department of Commerce, Washington, D.C.
- (87) Hermann, L. 1871 *Pflügers Arch. ges. Physiol.* 4: 163.
———. 1879 *Handbuch der Physiologic*, Vogel Verlag, Leipzig, Band II Theil I
- (88) Graham, J. and Gerard, R.W. 1946 *J. Cell. Corp. Physiol* 28: 99.
Ling, G. N. and Gerard, R. W. 1949 *J. Cell. Corp. Physiol.* 34: 383.
Weidemann, S. 1971 in *Research in Physiology*, (F. F. Kao, K. Koizumi and M Vassale, eds.), Aulo Gaggi Publ., Bologna, pp. 3-25.
- (89) DuBois-Reymond, E. 1848-1849 *Untersuchungen über Thierische Elektrizität*, Vol. I and II, Reimer, Berlin.
- (90) Troshin, A.S. 1956 *Problema kletochnoi pronitsaemosti*, Moskva-Leningrad.
- (91) Troshin, A.S. 1958 *Das Problem der Zeilpermeabilitat*, Gustav. Fischer Verlag, Jena.
- (92) Troshin, A.S. 1966 *Problems of Cell Permeability*, (English Transl. by M.G. Hell and N. D. Widdas), Pergamon Press, London.
- (93) Troshin, A.S. 1948 *Biokhimiya* 13: 253.
———. 1951a *Byull. eksp. biol. med.* 31: 180.
———. 1951b *Byull. eksp. biol. med.* 31: 285.
———. 1951c *Byull. eksp. biol. med.* 32: 162.
———. 1951d *Byull. eksp. biol. med.* 33: 228.
———. 1951e *Biokhimiya* 16: 164.
———. 1952 *Byull. eksp. biol. med.* 34: 59.
- (94) Ling, G. N. 1951 *Amer. J. Physiol.* 167: 806.
- (95) Ling, G. N. and Gerard, R. W. 1949a *J. Cell. Corp. Physiol.* 34: 383.
———. 1949b *J. Cell. Corp. Physiol.* 34: 397.
———. 1949c *J. Cell. Corp. Physiol.* 34: 413.
Ling, G.N. and Woodbury, J. W. 1949 *J. Cell. Corp. Physiol.* 34: 407.
- (96) Ling, G. N. 1952 in *Phosphorus Metabolism*, Vol. II, (W.D. McElroy and B. Glass, eds.), The Johns Hopkins Univ. Press, Baltimore, p. 748.
- (97) Guggenheim, E. A. 1950 *Thermodynamics, An Advanced Treatise for Chemists and Physicists*, Interscience Publ., Inc., 2nd ed.. New York, pp. 330-331.

- (98) Ling, G. N. 1962 *A Physical Theory of the Living State: the Association-Induction Hypothesis*, Blaisdell Publ. Co., Waltham, Mass.
- (99) Bugarszky, S. and Liebermann, L.I 898 Arch. ges. Physiol. 72: 51.
Michaelis, L. and Rona, P. 1908 Biochem. Z. 14: 476.
Pauli, W. and Samec, M. 1909 Biochem Z. 17: 235.
Erdos, T. 1946 Hung. Acta Physiol. 1: 33.
Beatley, E. H. and Klotz, I. M. 1951 Biol. Bull. 101: 215.
Carr, C.W. 1956 Arch. Biochem. Biophys. 62: 476.
Lewis, M. S. and Saroff, H. A. 1957 J. Amer. Chem. Soc. 79: 2112.
- (100) Bethe, A. and Toropoff, T. 1914 Z. Phys. Chem. 88: 686.
———. 1915 Z. Phys. Chem. 89: 597.
Mond, R. 1927 Pflüger's Arch. Ges. Physiol. 217: 618.
Teorell, T. 1953 Progr. Biophys. Biophys. Chem. 3: 305.
Meyer, K. H. and Sievers, J. F. 1936 Helv. chim. Acta 19: 649, 665.
Sollner, K. 1949 J. Phys. Colloid. Chem. 53: 1211.
- (101) Gunn, R. B. 1979 in *Membrane Transport in Biology*, Volume II (D.C. Tosteson, ed.), Springer-Verlag, New York, Chapt. 2, p. 61.
- (102) Arrhenius, S. 1887 Z. physk. Chem. 1: 631.
- (103) Debye, P. and Huckel, W. 1923 Phys. Z. 24: 185.
- (104) Ives, D.J.G. and Janz, G. J. 1961 *Reference Electrodes*, Academic Press, New York.
- (105) Sollner, K. 1949 J. Phys. Colloid. Chem. 53: 1211.
- (106) Ling, G. N. 1960 J. Gen. Physiol. 43: 149.
- (107) Ling, G.N. 1992 *A Revolution in the Physiology of the Living Cell*, Krieger Publ. Co., Malabar, Fl.
- (108) Speakman, J. B. and Hirst, M. C. 1931 Nature 127: 665.
- (109) Riseman, J. and Kirkwood, J. G. 1948 J. Amer. Chem. Soc. 70: 2820.
- (110) Debye, P. and Pauling, L. 1925 J. Amer. Chem. Soc. 47: 2127.
Webb, T. J. 1926 J. Amer. Chem. Soc. 48: 2589.
- (111) Goi-in, M. 1939 J. Chem. Phys. 7: 405.
Ling, G.N. 1957 in *Metabolic Aspect of Transport across Cell Membrane*, (Q.R. Murphy, ed.), Univ. Wisconsin Press, Madison, pp. 181-186.
- (112) Ling, G. N. 1978 J. Physiol. (London) 280: 105.
- (113) Ling, G. N. 1973 Physiol. Chem. Phys. 5: 295.
- (114) Ling, G. N. and Zhang, Z. L. 1984 Physiol. Chem. Phys. & Med. NMR 16:

- 221.
- (115) Huang, H. W., Hunter, S.H., Warburton, W. K. and Moss, S.C. 1979 *Science* 204: 191.
- (116) Ling, G. N. and Ochsenfeld, M. M. 1966 *J. Gen. Physiol.* 49: 819.
- (117) Langmuir, L. 1916 *J. Amer. Chem. Soc.* 38: 2221.
———. 1918 *J. Amer. Chem. Soc.* 40: 1361.
- (118) Hoare, D. G. and Koshland, D. E. 1967 *J. Biol. Chem.* 242: 2447.
Khorana, H. G. 1953 *Chem. Rev.* 53: 145.
- (119) Ling, G.N. 1989 *Physiol. Chem. Phys. & Med. NMR* 21: 13.
- (120) Stecher, P. G., Windholz, M., Leahy, D. S., Bolton, D. M. and Eaton, L. G., (eds) 1968. *The Merck Index*, 8th ed. Merck and Co., Rahway, N.J.
- (121) Tanford, C. 1962 *Adv. Protein Chem.* 17: 69.
- (122) Ling, G.N. and Ochsenfeld, M.M. 1991 *Physiol. Chem. Phys. & Med. NMR* 23: 133.
- (123) Engelmann, T. W. 1873 *Pflüger's Arch. Ges. Physiol.* 7: 155.
Hanson, J. and Huxley, H. E. 1953 *Nature* 172: 530.
- (124) Ling, G. N., 1977 *Physiol. Chem. Phys.* 9: 319.
- (125) Edelmann, L., 1977 *Physiol. Chem. Phys.* 9: 313.
- (126) Edelmann, L. 1978 *Microsc. Acta Suppl.* 2: 166.
———. 1980 *Physiol. Chem. Phys.* 12: 509.
———. 1980a *Histochem.* 67: 233.
———. 1980-1981 *Intern. Cell Biol.* (H. G. Schweiger, ed.) Springer, Berlin, p. 941.
———. 1983 *Physiol. Chem Phys. & Med. NMR* 15: 337.
———. 1984 *Scanning Electron Microscopy II*: 875.
———. 1986 in *Science of Biological Specimen Preparation*, (M. Muller, R. P. Becker, A. Boyde and J. J. Wolosewick, eds.) SEM Inc., AMF O'Hare, Chicago, 111., p. 33.
———. 1986a *Scanning Electron Microscopy*, SEM Inc., Chicago, 111. IV: 1337.
———. 1988 *Scanning Microscopy* 2: 851.
———. 1991 *Scanning Microscopy* 5: S-75.
———. 1994 *Scanning Microscopy* 8: 67.
———. 1996 *Scanning Microscopy* 10: 295.
———. 1998 *Scanning Microscopy* 12: 1.
- (127) Gregor, H. 1948 *J. Amer Chem. Soc.* 70: 1293.
———. 1951 *J. Amer. Chem. Soc.* 73: 642.

- (128) Fletcher, W.M. and Hopkins, F.G. 1907 J. Physiol.(London) 35: 247.
- (129) Edelmann, L. 1989 Scanning Microscopy 3: 1219.
- (130) Gulati, J., Ochsenfeld, M.M. and Ling, G. N., 1971 Biophys. J. 11: 973.
- (131) Ling, G. N., Miller, C. and Ochsenfeld, M. M. 1973 Ann. N.Y. Acad. Sci. 204: 6.
- (132) Lipmann, F. 194] Adv. Enzymol. 1: 99.
- (133) Podolsky, R. J. and Morales, M. F. 1956 J. Biol. Chem., 218: 945.
- (134) George, P. and Rutman, R. J. 1960 Prog. Biophys. Biophys. Chem. 10: 1.
- (135) Baker, P. F., Hodgkin, A. L. and Shaw, T. I. 1961 Nature 190: 885.
Oikawa, T., Spyropoulos, C. S., Tasaki, I. and Teorell, T. 1961 Acta Physiol. Scand. 52: 195.
- (136) Ling, G. N., 1965 Persp. Biol. Med. 9: 87.
- (137) Baker, P. F., Foster, R. F., Gilbert, D.S., and Shaw, T.I. 1971 J. Physiol. (London) 219: 487.
- (138) Ling, G. N. and Negendank, W. 1980 Persp. Biol. Med. 23: 215.
- (139) Ling, G. N., and Tucker, M. 1983 Physiol. Chem. Phys. & Med. NMR 15: 311.
- (140) Ling, G. N., Zodda, D. and Sellers, M. 1984 Physiol. Chem. Phys. & Med. NMR 16: 381.
- (141) Cope, F. W. 1967 Bull. Math. Biophys. 29: 583.
- (142) Murphy, Q. R. (Ed.) 1957 *Metabolic Aspects of Transport across Cell Membrane*, Univ. of Wisconsin Press, Madison.
- (143) Bregman, J. I. 1953 Ann. N. Y. Acad. Sci. 57: 125.
- (144) Teunissen, P. H., Rosenthal, S. and Zaayer, W. H., 1938 Rec. Trav. Chim. Pays Bas. 57: 929.
- (145) Ling, G. N., 1955 Fed. Proc. 14: 93.
- (146) Eisenman, G., Rudin, D. O. and Casby, J. U. 1957 Paper presented at the 10th Annual Conference on Electrical Techniques in Medicine and Biology of the A.I.E.E., I.S.A. and I.R.E., Boston, November 1957, not printed.
Rudin, D.O., and Eisenman, G. 1959 Abstract, 21 st Intern. Congress Physiol. Sciences, p. 237.
- (147) Ling, G. N. 1960 J. Gen. Physiol. 43 (Suppl.): 149.

- (148) Eisenman, G. (ed.) 1967 *Glass Electrodes for Hydrogen and Other Cations: Principles and Practices*, Marcel Dekker, New York.
- (149) Anfinson, C. B. 1962 *Brookhaven Symp. Biol.* 15: 184.
———. 1967 *Harvey Lectures* 61: 95.
- (150) Ling, G. N. 1986 *Physiol. Chem. Phys. & Med. NMR* 18: 3.
- (151) Chou, P. Y. and Fasman, G. D. 1978 *Adv. Enzymol.* 47: 45.
- (152) Tanaka, S. and Scheraga, H. A. 1976 *Macromol.* 9: 168.
- (153) Gamier, J., Osguthorpe, D. J. and Robson, B. 1978 *J. Mol. Biol.* 120: 97.
- (154) Ling, G. N. 1965 *Ann. N. Y. Acad. Sci.* 125: 401.
- (155) Ling, G. N. 1972 in *Water and Aqueous Solutions, Structure, Thermodynamics, and Transport Processes* (A. Home, ed.) Wiley-Interscience, New York, pp. 663-699.
- (156) Ling, G.N., Niu, Z. and Ochsenfeld, M.M. 1993 *Physiol. Chem Phys. & Med. NMR* 25: 177.
- (157) Veis, A. 1964 *The Macromolecular Chemistry of Gelatin*, Academic Press, New York.
- (158) Ling, G. N. 1985 in *Water and ions in Biological Systems* (A. Pullman, V. Vasilescu and L. Packer, eds.), Plenum Press, New York. (2nd Intern. Conf. Bucharest, Sept. 6-11, 1982) pp.79-94.
- (159) Ling, G. N. and Negendank, W. 1970 *Physiol. Chem. Phys.* 2: 15.
- (160) Ling, G. N. 1983 *Physiol. Chem. Phys. & Med. NMR* 15: 155.
- (161) Ling, G. N. and Ochsenfeld, M. M. 1987 *Physiol. Chem. Phys. & Med. NMR* 19: 177.
- (162) Ling, G. N. and Zhang, Z. L. 1983 *Physiol. Chem. Phys. & Med. NMR* 15: 391.
- (163) Ling, G. N. and Hu, W. H. 1987 *Physiol. Chem Phys. & Med. NMR* 19: 251.
- (164) Ling, G. N. and Murphy, R. C. 1983 *Physiol. Chem. Phys. & Med. NMR* 15: 137.
- (165) Clegg, J. S., Szwarnowski, S., McClean, V.E.R., Sheppard, R. J. and Grant, E. H. 1982 *Bioch. Biophys. Acta* 721:458.
Clegg, J. S., McClean, V.E. R., Szwarnowski, S. and Sheppard, R. J. 1984 *Phys. Med. Biol.* 29: 1409.

- (166) Trantham, E. C., Rorschach, H. E., Clegg, J. C., Hazlewood, C. F. Nicklow, R. M. and Wakabayashi, N. 1984 *Biophys. J.* 45: 927.
- Heidom, D. B., Rorschach, H. E., Hazlewood, C. F., Ling, G. N. and Nicklow, R. M. 1986 *Biophys. J.* 49: 92A.
- (167) Ludwig, C. 1849 *Z. ration. Med. von Henie* 8: 1.
- (168) Ling, G. N. 1993 *Physiol. Chem. Phys. & Med. NMR* 25: 145.
- (169) Ling, G. N. 1987 *Physiol. Chem. Phys. & Med. NMR* 19: 193.
- (170) Ling, G. N. and Hu, W. 1988 *Physiol. Chem. Phys. & Med. NMR* 20: 293.
- (171) Ling, G. N. and Hu, W. (to be published).
- (172) Ling, G.N. and Ochsenfeld, M.M. 1983 *Physiol. Chem. Phys. & Med. NMR* 15: 127.
- (173) Ling, G. N. 1969 *Intern. Rev. Cytology* 26: 1.
- (174) Ling, G. N. 1988 *Physiol. Chem Phys. & Med. NMR* 20: 281.
- (175) Ling, G. N. and Ochsenfeld, M. M. 1989 *Physiol. Chem. Phys. & Med. NMR* 21: 19.
- (176) Luyet, B. J. and Hartung, M. C. 1941 *Biodynamica* 3: 353.
Polge, C., Smith, A. U. and Parks, A. S. 1949 *Nature* 164: 666.
Rail, W. F. 1987 *Cryobiology* 24: 387.
- (177) Szent-Gyorgyi, A. 1978 *The Living State and Cancer*, Marcel Dekker Inc. New York.
- (178) Rushbrooke, G. S. 1949 *Introduction to Statistical Mechanics*, Clarendon Press, Oxford.
Myers, J. E. and Meyer, M. G. 1940 *Statistical Mechanics*, John Wiley & Sons, New York.
Fowler, R. and Guggenheim, E. A. 1960 *Statistical Thermodynamics: A Version of Statistical Mechanics for Students of Physics and Chemistry*, Cambridge University Press, Cambridge.
- (179) Ernst, E. and Hazlewood, C.F. 1979 *Inorganic Perspectives in Biol and Med* 2: 181.
- (180) Pollack, G. H. 1990 *Muscle and Molecules: Uncovering the Principles of Biological Motion*, Ebner & Sons, Seattle.
———. 2001 *Cells, Gels and the Engine of Life, A New Unified Approach to Cell Function*, Ebner & Sons, Seattle, WA, USA.
- (181) Barcroft, J. 1928 *The Respiratory Function of the Blood*, Part II. Hemoglobin, The Cambridge University Press, London.

- (182) Forbes, W. H. and Roughton, F. J. W. 1931 J. Physiol. (London) 71: 229.
- (183) Hill, A. V. 1910 J. Physiol. (London) 40: iv.
Hill, R. and Wolvekamp, H. P. 1936 Proc. Roy. Soc. (London) B 120: 484.
- (184) Wyman, J. 1964 Adv. Protein Chem. 19: 223.
- (185) Yang, C. N. and Ling, G. N., in Ling, G.N. 1964 Biopolymers (Biophys. Symp. Issue) 1:91.
- (186) Ling, G. N. 1970 Proc. Nat. Acad. Sci. 67: 296.
- (187) Bohr, C. 1890 Z. physiol. Chem. 4: 249.
- (188) Manwell, C. 1958 Science 127: 593.
- (189) Chanutin, A. and Curlish, R. R. 1967 Arch. Biochem. Biophys. 121: 96.
Chanutin, A. and Hermann, E. 1969 Arch. Biochem. Biophys. 131: 180.
Klinger, R. G. , Zahn, D. P., Brox, D. H. and Frunder, H. E. 1971 Europ. J. Biochem 18: 171.
- (190) Ling, G.N. and Bohr, G. 1971 Physiol. Chem. Phys. 3: 431.
- (191) Miseta, A., Bogner, P., Berenyi, E., Kellermayer, M., Galambos, S. and Wheatley, D. N. and Cameron, I. L. 1993 Biochem. Biophys. Acta 1175: 133.
- (192) Bull, H. 1944 J. Amer. Chem. Soc. 66: 1499.
Dole, M. and Faller, I. L. 1950 J. Amer. Chem. Soc. 72: 414.
Katchman, D. and McLaren, A. D. 1951 J. Amer. Chem. Soc. 73: 2124.
McLaren, A. D. and Rowen, J. W. 1951 J. Polymer Sic. 7: 289.
Hnojewyj, W. S. and Reyerson, L. H. 1959 J. Phys. Chem. 63: 1653.
Eley, D. D. and Leslie, R. B. 1964 in *The Structure and Properties of Biomolecules and Biological Systems*, pp. 238-258.
D'Arcy, R. L. and Watt, I. C. 1970 Trans. Farad. Soc. 66: 1236.
Leeder, J. D. and Watt, I. C. 1974 J. Coll. Interfac. Sci. 48: 339.
- (193) Speakman, J. B. 1944 Trans. Farad. Soc. 40: 6.
Leeder, J. D. and Watt, I. C. 1965 J. Phys. Chem. 69: 3280.
- (194) Katz, J. R. 1919 Kolloidchem. Beih. 9: 1.
- (195) Ling, G. N. 1987 Physiol. Chem. Phys. & Med. NMR 19: 159.
- (196) von Korosy, K. 1914-1915 Z. physiol. Chem. 93: 154.
- (197) Hodgman, C. D., Weast, R.C. and Selby, S.M. (Ed.) 1961 Handbook of Chemistry and Physics, 43rd Ed., The Chemical Rubber Publ. Co., Cleveland, Ohio.
- (198) Ling, G. N. and Peterson, K. 1977 Bull. Mathem. Biol. 39: 721.

- (199) Ling, G. N. and Kwon, Y. 1983 *Physiol. Chem. Phys. & Med. NMR* 15: 239.
- (200) Singer, S. J. and Nicolson, G. L. 1972 *Science* 175: 720.
- (201) Ling, G. N., Ochsenfeld, M.M. and Karreman, G. 1967 *J. Gen. Physiol.* 50: 1807.
- (202) Ling, G. N. and Reisin, I. L. 1973 *Physiol. Chem. Phys.* 5: 183.
- (203) Caille, J. P. and Hinke, J. A. M. 1974 *Canad. J. Physiol. Pharmacol.* 52: 814.
- (204) Abetsedarskaya, L. A., Miftakhutdinova, J. G. and Fedotov, V. D. 1968 *Biofizika* 13: 630; *Biophysics (English Transl.)* 13: 750.
- (205) Finch, E. D., Harmon, J. F. and Muller, B. H. 1971 *Arch. Biochem. Biophys.* 147: 299.
- (206) Walter, J. A. and Hope, A. B. 1971 *Austral. J. Biol. Sci.* 24: 497.
- (207) Bunch, W. H. and Kallsen, G. 1969 *Science* 164: 1178.
- (208) Ling, G. N. 1987 *Physiol. Chem. Phys. & Med. NMR* 19: 199.
- (209) Miyamoto, V. K., and Thompson, T. E. 1967 *J. Coll. Interf. Sci.* 25: 16.
Miyamoto, V. K. 1966 *DC Electrical Properties of Lipid Bilayer Membranes*, Ph.D Thesis, The Johns Hopkins University, Baltimore.
- (210) Andreoli, T. E., Bangham, J. A. and Tosteson, D. C. 1967 *J. Gen. Physiol.* 50: 1729.
Andreoli, T. E., Tiffenberg, M. and Tosteson, D. S. 1967 *J. Gen. Physiol.* 50: 2527.
- (211) Ling, G. N. and Ochsenfeld, M.M. 1986 *Physiol. Chem. Phys. & Med. NMR* 18: 109.
- (212) Stillman, I. M., Gilbert, D. L., and Robbins, M. 1970 *Biochem. Biophys. Acta* 203: 338.
- (213) Maloff, B. L., Scordillis, S. P., Reynold, C. and Tedeschi, H. 1978 *J. Cell Biol.* 78: 199.
- (214) Fleischer, S., Fleischer, B. and Stoeckenius, W. 1967 *J. Cell Biol.* 32: 193.
- (215) Napoliano, L., Le Baron, F., and Scaletti, J. 1967 *J. Cell Biol.* 34: 817.
Morowitz, H. J., and Terry, T.M. 1969 *Biochim. Biophys. Acta* 183: 276.
- (216) Fox, S. W. 1973 *Naturwissenschaften.* 60: 359.
- (217) Ling, G. N. 1973 *Biophys. J.* 13: 807.

- (218) Ling, G. N. 1953 Proc. 19th Intern. Physiol. Congr., Montreal, Canada, p. 566.
- (219) Ling, G. N. 1955 Amer. J. Phys. Med. 34: 89.
- (220) Epstein, E. and Hagen, C.E. 1952 Plant Physiol. 27: 457.
- (221) Conway, E., J. and Duggan, F. 1958 Biochem. J. 69: 265.
- (222) Ling, G.N. and Ochsenfeld, M.M. 1965 Biophysical J. 5: 777.
- (223) Ling, G.N. and Ochsenfeld, M.M. 1970 Physiol. Chem. Phys. 2: 189.
- (224) Muller, P. 1975 Ann. N.Y. Acad. Sci. 264: 97.
- (225) Ling, G.N. 1981 Physiol. Chem. Phys. 13: 356.
Ling, G.N. 1990 Scanning Microscopy 4: 723.
- (226) Koefoed-Johnson, V. and Ussing, H.H. 1958 Acta Physiol. Scand. 42: 298.
- (227) Maddrell, S.H.P. in *Membrane Transport in Biology* Vol. 3, pp. 250-251 (G. Giebisch, ed.) Springer, New York, p. 239.
- (228) Spring, K.R. and Giebisch, G. 1977 J. Gen Physiol. 70: 307.
- (229) Morel, F. 1961 in *Proc. Intern. Congr. Nephrology*, Karger, Basel, p. 16.
- (230) Hodgkin, A.L. and Katz, B. 1949 J. Physiol (London) 108: 37.
- (231) Goldman, D.E. 1943 J. Gen. Physiol. 27: 37.
- (232) Bernstein, J. 1912 *Elektrobiologie*, F. Vieweg und Sons, Braunschweig.
- (233) Hodgkin, A.L. and Katz, B. 1949 J. Physiol. (London) 109: 240.
- (234) Adrian, R. H. 1956 J. Physiol. (London) 133: 631.
- (235) Hodgkin, A. L. and Horowicz, P. 1960 J. Physiol. (London) 153: 404.
- (236) Hodgkin, A.L. 1958 Proc. Roy. Soc. (London) Ser. B 148: 1.
- (237) Katz, B. 1966 *Nerve, Muscle and Synapse*, McGraw Hill, New York.
- (238) Kernan, R.P. 1970 in *Membranes and Ion Transport*, Vol. 1 (E. E. Bittar ed.) Wiley-Interscience, New York, p. 395.
- (239) Baur, E. 1913 Z. Elektrochem. 19:590.
- (240) Akaike, N. 1975 J. Physiol. (London) 245: 499.

- (241) Baur, E. and Kronmann, S. 1917 Z. physik. Chem. 92: 81.
- (242) Ehrensvar, G. and Sillen, L. G. 1938 Nature 141: 788.
- (243) Colacicco, G. 1965 Nature 207: 936.
- (244) Ling, G. N. 1966 Fed. Proc. (Symposium Issue) 25: 958.
- (245) Ling, G. N. 1959 Fed. Proc. 18: 371.
- (246) Edelmann, L. 1973 Ann. N.Y. Acad. Sci. 204: 534.
- (247) Ling, G.N. <<http://www.gilbertling.org>>
- (248) Ling, G.N. 1979 Physiol. Chem. Phys. 11: 59.
- (249) Armstrong, C. M. 1975 in *Membranes: A Series of Advances*. Vol. III (G. Eisenman ed.) Academic Press, New York, p. 325.
- (250) Hille, B. 1975 in *Membranes: A Series of Advances*. Vol. III (G. Eisenman, ed.) Academic Press, New York, p. 255.
- (251) Hodgkin, A.L. and Huxley, A. F. 1952 J. Physiol. (London) 116: 449.
- (252) Hodgkin, A.L., Huxley, A. F. and Katz, B., 1952 J. Physiol. (London) 116: 424.
- (253) Hodgkin, A.L. and Huxley, A. F. 1945 J. Physiol. (London) 104: 176.
- (254) Shores, L. 1961 *Collier's Encyclopedia* Vol. 16, p. 217 Cromwell-Collier Publ. Co., New York.
- (255) Chandler, W. K. and Meves, D. E. 1965 J. Physiol (London) 180: 788.
- (256) Ling, G.N. 1957 Fed. Proc. 16: 81.
- (257) Ling, G. N. 1982 Physiol. Chem. Phys. 14: 47.
- (258) Hille, B. 1968 J. Gen. Physiol. 51: 221.
- (259) Hille, B. 1975 Fed. Proc. 34: 1318.
- (260) Stillman, I. M., Gilbert, D. L. and Lipidsy, R.J. 1971 Biophys. J. 11: 55a.
- (261) Khodorov, B. I. 1978 in *Membrane Transport Process* Vol. 2 (D.T. Tosteson, A. Yu. Ovchinnikov and R. Latorre, eds.) Raven Press, New York, p. 153.
- (262) Villegas, R., Blei, M. and Villegas, G. M., 1965 J. Gen. Physiol. 48: 35.
- (263) Hodgkin, A. L. and Keynes, R. D. 1953 J. Physiol (London) 119: 513.

- (264) Kushmerick, M. J. and Podolsky, R. J. 1969 *Science* 166: 1297.
- (265) Hober, R. 1913 *Pflüger's Arch. Ges. Physiol.* 150: 15.
- (266) Thomson, D. L. 1928 *J. Physiol. (London)* 65: 214.
Hartree, W. and Hill, A. V. 1921 *Biochem. J.* 15: 379.
- (267) Edelmann, L. 1986 *Science of Biological Specimen Preparation*, SEM Inc., AMF O'Hare, Chicago, pp. 33-42, Fig. 4.
- (268) Levi, H. and Ussing, H.H. 1948 *Acta Physiol. Scand.* 16: 232.
- (269) Robertson, J. D. 1950 *Progr. Biophys. Biophys. Chem.* 10: 343.
Sjöstrand, F.S. 1990 *Deducing Function from Structure, Vol. 1: A Different View of Membranes*, Academic Press, San Diego, p. 224.
- (270) Kushmerick, M. J. 1979 *Trends Biochem. Sci. Lett. Ed. (TIBS)* 3: N210.
- (271) Ling, G.N. 1979 *Trends Biochem. Sci. Lett. Ed. (TIBS)* 4: N134.
- (272) Lohmann, K. 1929 *Naturwissenschaften* 17: 624.
———. 1931 *Biochem. Z.* 233: 460.
- (273) Lehninger, A.L. 1975 *Biochemistry*, 2nd ed. Worth Publishers, New York.
- (274) Jones, A. W. 1965 Ph. D. Thesis, Univ. of Pennsylvania, Philadelphia.
- (275) Minkoff, L. and Damadian, R.V. 1973 *Biophys. J.* 13: 167.
———. 1974 *Biophys. J.* 14: 69.
- (276) Ling, G. N. and Cope, F. W. 1969 *Science* 163: 1335.
- (277) Crank, J. 1956 *The Mathematics of Diffusion*, Clarendon Press, Oxford.
- (278) Bradley, R.S. 1936 *J. Chem. Soc.* 1936: 1799.
- (279) Ling, G. N. and Bohr, G. 1970 *Biophys. J.* 10: 519 .
- (280) Ling, G. N. and Bohr, G. 1971 *Physiol. Chem. Phys.* 3: 573.
- (281) Skou, L.C. 1965 *Physiol. Rev.* 45: 596.
- (282) Edelmann, L. 1991 *Scan. Microsc.* 5: S-75.
- (283) Engelhardt, V. A. and Ljubimova, M.N. 1939 *Nature* 144: 668.
- (284) Morales, M. and Botts, J. 1953 *Disc. Farad. Soc.* 13: 125.
- (285) Temer, C., Eggleston, L. V. and Krebs, H.A. 1950 *Biochem. J.* 47: 139.

- (286) Koechlin, B.A. 1955 J. Biophys. Biochem. Cytol. 1:511.
- (287) Goody, R.S., Hofmann, W. and Mannherz, H.G. 1977 Europ. J. Biochem. 78: 317.
Cardon, J. W. and Boyer, P.D. 1978 Europ. J. Biochem. 92: 443.
- (288) Lowey, S. and Luck, S.M. 1969 Biochem. 8: 3195.
Marsh, D.J., De Bruin, S.H. and Gratzner, W. B. 1977 Biochem. 16: 1738.
- (289) Ling, G. N. 1981 Physiol. Chem. Phys. 13: 29.
- (290) Ling, G.N. and Woodbury, W. 1949 J. Cell. Corp. Physiol. 34: 407.
Coraboeuf, E. and Weidemann, S. 1954 Helv. Physiol. Acta 12: 32.
- (291) Hodgkin, A. L. and Katz, B. 1949 J. Physiol. (London) 109: 240.
- (292) McDonald, J. S. 1900 Proc. Roy. Soc. (London) 67: 310.
Curtis, H. J. and Cole, K. S. 1942 J. Cell. Corp. Physiol. 19: 135.
Ling, G.N. and Gerard, R. W. 1950 Nature 165: 113.
- (293) Huxley, A.E. and Stampfli, R. 1951 J. Physiol. (London) 112: 496.
- (294) Nastuk, W. L. and Hodgkin, A. L. 1950 J. Cell. Corp. Physiol. 35: 39.
- (295) Ling, G. N. 1980 in *Cooperative Phenomena in Biology* (G. Karreman, ed.) Pergamon Press, New York.
- (296) Ling, G. N. and Walton, C. L. 1976 Science 191: 295 .
- (297) Miller, C. and Ling, G. N. 1970 Physiol. Chem. Phys. 2: 495.
- (298) Luyet, B. and Rapatz, G. 1956 Biodynamica 8: 1.
- (299) Odeblad, E., Bhar, B. N. and Lindstrom, G. 1956 Arch. Biochem. Biophys. 63: 221.
Bratton, C. B. Hopkins, A. L. and Weinberg, J. W. 1965 Science 147: 738.
- (300) Cope, F. W. 1969 Biophys. J. 9: 303.
- (301) Hazlewood, C.F., Nichols, B. L. and Chamberlain, N. F. 1969 Nature 222: 747.
Hazlewood, C. F. 1979 in *Cell Associated Water* (W. Drost-Hanson and J.S. Clegg, eds.) Acad. Press, New York, p. 165.
Hazlewood, C.F. 1973 Ann. N.Y. Acad. Sci. 204: 593.
- (302) Damadian, R. 1971 Science 171: 1151.
- (303) Kaatze, U. 1975 Adv. Molecular Relaxation Process 7: 71.
- (304) Rorschach, H. E. 1984 in *Water, Ions in Biological Systems*, (V. Vasilescu Ed.) Plenum Press, New York.

- (305) Kleinfeld, S. 1985 *A Machine Called Indomitable*, Times Books, New York.
<<http://www.fonar.com>>.
- (306) Ling, G.N., Ochsenfeld, M.M., Walton, C. and Bersinger, T.L 1980 *Physiol. Chem. Phys.* 12:3.
Ling, G. N., Walton, C. and Bersinger, T. J. 1980 *Physiol. Chem. Phys.* 12: 111.
- (307) Ling, G. N., Walton, C.L. and Ochsenfeld, M.M. 1981 *J. Cell. Physiol.* 106: 385.
- (308) Lamarck, J. B. 1830 *Philosophic zoologique au exposition des considérations relatives à l'histoire des animaux* (Paris, Nouvelle éd.) (First published in 1809). 1: 403.
Landrieu, M. 1797 *Lamarck* p. 161, excerpting his *Memoires de physique et d'histoire naturelle*.
- (309) Hall, T. S. 1969 *Ideas of Life and Matter. Studies in the History of General Physiology: 600 B.C.-1900 A.D.*, Univ. of Chicago Press, Chicago, Vol. 1.
- (310) Hill, D. K. 1962 *J. Physiol. (London)* 164: 31.
- (311) Renkin, E.M. 1954 *J. Gen. Physiol.* 38: 225.
- (312) Ling, G.N. and Ochsenfeld, M.M. 1973 *Science* 181: 78.
- (313) Ling, G. N. and Ochsenfeld, M.M. 1973 *Ann. N. Y. Acad. Sci.* 204: 325.
- (314) Ling, G. N., Baxter, J. D. and Leitmann, M.I. 1984 *Physiol. Chem. Phys. & Med. NMR* 16:405.
- (315) Chambers, R. 1922 *J. Gen. Physiol.* 5: 189.
- (316) MacDonald, J.S. 1900 *Proc. Roy. Soc. (London)* 67: 310.
- (317) Ling, G.N. 1981 *Die Zeile. Struktur und Funktion* (H, Metzner, ed.), 3rd ed., Wissenschaft. Verlag, Stuttgart, Germany, pp. 356-389.
- (318) Meyerhof, O. and Lohman, K. 1932 *Biochem. Z.* 253: 431.
- (319) Teunissen, P. H. and Bungenberg de Jong, H.G. 1949 *Kolloid Beih.* 48: 33.
- (320) Collander, R. 1959 in *Plant Physiology*, vol. 2 (F.C. Steward, ed.) Academic Press, New York, p.3.
- (321) Bungenberg de Jong, H. G. 1932 *Protoplasma* 15: 110.
- (322) Perutz.M. 1978 *Science* 201: 1189.
- (323) Muller, O. F. 1786 *Animalcula infusoria*, Hausiae.

- (324) Lepeschkin, W.W. 1930 *Protoplasma* 9: 269.
Duclaux, J. 1934 *Actualités scientif.*, Herman edit., Paris, 127, pp. 1-3.
Guilliermond, A. 1941 Chron. Botan. Co., Mass., pp. 1-246.
Oparin, A.I. 1941 *The Origin of Life on the Earth* (in Russian), Moscow-Leningrad, pp. 1-268.
- (325) Lepeschkin, W.W. 1936 *Biodynamica* 19: 1.
- (326) Schneider, D. 1997 *Scientific American* 276: 3.
- (327) Edelman, L. 1989 *Scan. Microsc. Supplement* 3: 241.
- (328) Page, L. and Adams, N.I. 1931 *Principles of Electricity. An Intermediate Text in Electricity and Magnetism*, D. Van Nostrand Co., Inc. New York.
- (329) Perutz, M. F., Muirhead, H., Cox, J.M., Goaman, L.C.G., Mathews, F.S., McGandy, E.L., and Webb, L. E. 1968 *Nature* 219: 29.
Perutz, M.F. 1969 *Proc. Roy. Soc. B*173: 113.
- (330) Sollner, K., Abrams, I. and Carr, C. W. 1941 *J. Gen. Physiol.* 24: 467; 25: 7.
- (331) Neville, M.C. 1973 *Ann. NY Acad.Sci.* 204: 538.
- (332) Kizel', A.P. 1940 *The Chemistry of Protoplasm (Khimiya protoplasm)*, Moscow-Leningrad, pp.1-624.
Nasonov, D.N. and Alexandrov, V. Ya. 1940 *The Reaction of Living Matter to External Agencies*, Moscow pp. 1-252.
- (333) Dean, R. 1941 *Biol. Symp.* 3: 331.
- (334) Jacobson, B. 1955 *J. Amer. Chem. Soc.* 77: 2919.
- (335) Mendelsohn, E. 1963 *Cell Theory and the Development of General Physiology*, Arch. intern. d'histoire de sciences 6: 419.
- (336) Ling, G.N. and Kromash, M.H. 1967 *J. Gen. Physiol.* 50: 677.
- (337) Lewis, G.N. 1923 *Valence and the Structure of Atoms and Molecules*, Chemical Catalogue, New York.
- (338) Hammett, L.P. 1970 *Physical Organic Chemistry*, 2nd ed., McGraw Hill, New York.
Branch, G.E.K. and Calvin, M. 1941 *The Theory of Organic Chemistry, An Advanced Course*, Prentice Hall, Englewood Cliffs, New Jersey.
Dewar, M.J.S. 1949 *The Electronic Theory of Organic Chemistry*, Oxford University Press, London.
Smith, R.P., Rhee, T. Magee, J. L. and Eyring, H. 1951 *J. Amer. Chem. Soc.* 73: 2263.
Ingold, C.K. 1953 *Structure and Mechanism in Organic Chemistry*, Cornell Univ. Press, Ithaca.
Taft, R.W. 1960 *J. Phys. Chem.* 64: 1805.

- Chiang, M.C. and Tai, T. C. 1963 *Scientia Sinica* 12: 785.
Chiang, M. C. 1987 *The Role of Homologous Linearity of Organic Compounds*, Science Press, Beijing.
- (339) Mattson, J. and Simon, M. 1995 *The Pioneers of NMR and Magnetic Resonance in Medicine: The Story of MRI*, Bar-ilan Univer. Press and Dean Books Co., Jericho, NY.
- (340) Ling, G.N. and Tucker, M. 1980 *J. Nat. Cancer Inst.* 64: 1199.
Ling, G. N. 1983 *Physiol. Chem. Phys. & Med. NMR* 15: 511.
Ling, G.N., Kolebic, T. and Damadian, R.V. 1990 *Physiol. Chem. Phys. & Med. NMR* 22: 1.
- (341) Hodgkin, A. L. 1971 *The Conduction of the Nervous Impulse*, Liverpool Univ. Press, Liverpool.
- (342) Baker, P. F. and Shaw, T. I. 1965 *J. Physiol. (London)* 180: 424.
- (343) Schultz, R. D. and Asunmaa, S. KL. 1969 *Recent Progr. Surf. Sci.* 3: 291.
- (344) Jain, M. K. 1972 *The Bimolecular Lipid Membrane: A System*, Van Nostrand-Rheinhold, New York.
- (345) Burger, A. 1960 *Medicinal Chemistry*, 2nd ed., Interscience Publishers, Inc., New York.
- (346) Cohen, I.B. 1985 *Revolution in Science*, Harvard Univ. Press, Cambridge.
- (347) Engelmann, T.W. 1873 *Pflügers Arch.ges. Physiol.* 7: 33, 155.
- (348) <<http://www.gilbertling.org/lp 11 .htm>>
- (349) <<http://post.queensu.ca/~forsdyke/peerrev.htm>>
- (350) <<http://www.gilbertling.org/lpl2.htm>>
- (351) Gary-Bobo, C.M. and Lindenberg, A.B. 1969 *J. Coll. Interf. Sci.* 29: 702.
- (352) Rothsuh, K.E. 1973 *History of Physiology*, (English transl. by G.B. Risse), Krieger Publ.Co., Malabar. Florida.
- (353) Ising, E. 1925 *Z. Phys.* 31: 253.
- (354) Landau, L.D. and Lifschitz, E.M. 1969 *Statistical Physics*, 2nd ed. Pergamon, London.
- (355) Dyson, F.J. 1969 *Commun. Math. Phys.* 12: 91.
- (356) Griffith, R.B. 1969 *Phase Transitions and Critical Phenomena*, vol 1, pp. 89-94, Academic Press., New York , p. 7.

- (357) Hill, A.V. 1932 *Physiol. Rev.* 12: 56.
- (358) Greenlee, R. T. 2000 *Cancer Statistics*, 2000, CA, Cancer Journal for Clinicians 50: 7.
- (359) Overton, E. 1902 *Pflügers Arch. Ges. Physiol.* 92: 346.
- (360) Nemst, W. 1892 *Z. physik. Chem* 9: 137.
- (361) Bendall, J. R. 1969 *Muscles, Molecules and Movement: An Essay in the Contraction of Muscles*, Amer. Elsevier Publ. Co, New York.
- (362) Lark-Horovitz, K. 1931 *Nature* 127: 440.
- (363) Schrodinger, E. 1944 *What is Life? The Physical Aspect of the Living Cell*, Cambridge Univ. Press, Cambridge (Canto Edition 1992).
- (364) VanDoren, C. 1991 *A History of Knowledge, Past Present and Future*, Bird Lane Press/Carol Publ. Group, New York.
- (365) Einstein, A. 1956 *Out of My Later Years*, Wings Books, New York.
- (366) Williams, L. P. 1965 *Michael Faraday, A Biography*, Da Capo Press, Inc., a Subsidiary of Plenum Publ. Co., New York.
- (367) Singer, C. 1915 "The Dawn of Microscopic Discoveries", *J. Roy. Microsc. Soc.* pp. 317-340.
- (368) Hooke, R. 1665 *Micrographia; or, Some Physiological Descriptions of Minute Bodies Made by Magnifying Glasses with Observations and Inquiries Thereupon*, London.
- (369) Selye. H. 1978 *The Stress of Life*, McGraw-Hill, New York (paperback ed.).
- (370) Nagy, S., Paál, M., Köszegi, T. Ludány and Kellermayer, M. 1998 *Physiol. Chem. Phys. & Med. NMR* 30: 141.
- (371) Infante, A.A., and Davies, R. C. 1962 *Biochem. Biophys. Res. Comm.* 9: 410.
- (372) Lundsgaard, E. 1930 *Biochem. Z.* 227: 51.
- (373) Nicolosky, B.P. 1937 *Acta Physicochimica. U.R.S.S.* 7: 597.
- (374) Horovitz, K. 1923 *Z. Physik.* 15: 369.
- (375) Horovitz, K. 1925 *Z. physik. Chem.* 115: 424.
———. 1925 *Sitzb. Akad. wiss. Wien, Abt. IIa*, 134, 335.
- (376) Ling, G. N. 1967 in *Glass Electrodes for Hydrogen and Other Cations* (G. Eisenman, Ed.) Marcel-Dekker, New York, pp. 284-292.

- (377) Ling, G. N. and Fisher, A. 1983 *Physiol. Chem. Phys.* 15: 369.
- (378) Menten, M. L. 1908 *Trans. Canad. Inst.* 8: 403.
- (379) Priestley, J. 1767 *The History and Current State of Electricity*, 1st ed. 2 volumes, London.
- (380) Horgan, J. 1996 *The End of Science: Facing the Limits of Knowledge in the Twilight of the Scientific Age*, Addison-Wesley, Reading, Mass.
- (381) Ling, G.N. and Bohr, G. 1969 *Physiol. Chem. Phys.* 1: 591.
- (382) Conway, E.J. 1957 in *Metabolic Aspects of Transport across Cell Membranes* (Q. R. Murphy, Ed.) Univ. Wisconsin Press, Madison, Wis., pp. 107-111.
- (383) Pick, A. 1882 *Mechanische Arbeit und Wärmeentwicklung bei der Muskelthätigkeit.*, Brockhaus, Leipzig.
- (384) Jacobson, B. 1953 *Nature* 172: 666.
- (385) Bemal, J.D. and Fowler, R.H. 1933 *J. Chem. Phys.* 1: 515.
- (386) Forslind, E. 1952 *Acta Polytechnica* 3 No. 5.
- (387) Szent-Gyorgyi, A. 1957 *Bioenergetics*, Acad. Press, New York.
- (388) Klotz, I.M. 1958 *Science* 128: 815.
- (389) Chambers, R. and Hale, H.P. 1932 *Proc. Roy. Soc (London) Ser. B* 110: 336.
- (390) Wilde, W.S. and O'Brien, J.M. 1953 *Proc. 19th Intern. Physiol. Congr.*, Montreal, p. 889.
- (391) Ernst, E. and Hazlewood, C.F. 1978 *Inorg. Persp. Biol. & Med.* 2: 27.
- (392) Edelmann, L. 1984 *Scann. Electron Microsc. II*; 875.
———. 1989 *Scann Microsc. Suppl.* 3: 241.
———. 1991 *J. Microsc.* 161: 217-228, p. 219, p. 226.
- (393) Cannon, C. G. 1955 *Mikrochim Acta* 2-3, 555.
- (394) Mizushima, S., Tsuboi, M., Shimanouchi, T., and Tsuda, Y. 1955 *Spectrochimica. Acta* 7: 100.
- (395) Bamford, C.H., Elliott, A. and Hanby, W.E. 1956 *Synthetic Polypeptides, Preparation, Structure and Properties*, Acad. Press, New York, pp. 197-199.
- (396) Wolfenden, W. 1978 *Biochem.* 17: 201.

- (397) Klotz, I. M. 1973 *Ann. NY Acad. Sci.* 226: 18.
Aizono, Y., Roberts, J.E., Sonnenberg, M. and Swislocki, N. I. 1974 *Arch. Biochem. Biophys.* 163: 634.
Imae, T., Fasman, G.D., Hinkle, P.M. and Tashjian, A.H. 1975 *Bioch. Biophys. Res. Comm.* 62: 923.
- (398) Ling, G. N. and Fu, Y. 1988 *Physiol. Chem. Phys. & Med. NMR* 20: 61.
- (399) Ernst, E., Tigyi, J. and Zahorcsek, A. 1950 *Acta Physiol. Acad. Sci. Hung.* 1: 5.
———. 1951 *Acad. Physiol. Acad. Sci. Hung.* 2: 78.
- (400) Hagen, R.D. 1986 *Windows to the Origins*, Naval Research Reviews 38: 4.
- (401) Michaelis, L. 1926 *Naturwissenschaften* 14: 33.
- (402) Fujita, A. 1926 *Biochem. Z.* 179: 18.
- (403) Collander, R. and Barlund, H. 1933 *Acta Botan. Fennica.* 11:1.
- (404) Woolf, H. B. (Editor-in-Chief) 1977 *Webster's New Collegiate Dictionary*, G.C. Merriam Co., Springfield, Mass.
- (405) Andreoli, T. E., Bangham, J. A. and Tosteson, D.C. 1967 *J. Gen. Physiol.* 50: 1729.
- (406) Muller, P. Rudin, D.O., Tien, H. T. and Wescott, W.C. 1962 *Nature* 194: 979.
———. 1963 *J. Phys. Chem* 67:534.
———. 1964 *Rec. Prog. Surface Sci.* 1: 379.
- (407) Tien, H. T. 1967 *J. Phys. Chem.* 71: 3395.
Cherry, R. J. and Chapman, D. 1969 *J. Mol. Biol.* 40: 19.
- (408) Cole, K.S. 1932 *J. Cell. Corp. Physiol.* 1:1.
- (409) Harvey, E. N. 1931 *Biol. Bull.* 60: 67.
- (410) Ueda, T., Muratsugu, M., Inoue, I. and Kobatake, Y. 1974 *J. Mol. Biol.* 18: 177.
- (411) Inoue, I., Ueda, T., and Kobatake, Y. 1973 *Bioch. Biophys. Acta* 298: 653.
- (412) Wood, E.H., Collins, D.A. and Moe, G.K. 1940 *Amer. J. Physiol.* 128: 635.
- (413) Miyake, M., Inoue, I. and Kobatake, Y. 1973 *Bioch. Biophys. Acta* 323: 367.
- (414) Inoue, I., Ishida, N. and Kobatake, Y. 1973 *Bioch. Biophys. Acta* 330: 27.
- (415) Inoue, I., Ishida, N. and Kobatake, Y. 1974 *Bioch. Biophys. Acta* 367: 24.
- (416) Koppenhofer, E. 1974 *Pflügers Arch. ges. Physiol.* 347: 71 (R36).

- (417) Zwaal, R.A., Roelofson, B. and Colley, C.M. 1973 *Bioch. Biophys. Acta* 300: 159.
- (418) Adrian, R.H. 1956 *J. Physiol.(London)* 133:631.
Baker, P.F., Hodgkin, A.L. and Shaw J.I. 1961 *Nature* 190: 885.
Hagiwara, S., Chichibu, S., Naka, K.I. 1964 *J. Gen. Physiol.* 48: 163.
Sato, M., Akaike, N. and Nishi, R. 1967 *Kumamoto Med. J.* 20: 39.
- (419) Tobias, J.M. 1950 *J. Cell. Comp. Physiol.* 36: 1.
Falk, G. and Gerard, R.W. 1954 *J. Cell. Corp. Physiol.* 43: 393.
Grundfest, H., Kao, C.Y., and Altamirano, M, 1954 *J. Gen. Physiol.* 38: 245.
Kao, C.Y. 1956 *Biol. Bull.* 111: 292.
Shaw, F.H. and Simon, S.E. 1955 *Austral. J. Exp. Biol. Med. Sci.* 33: 153.
Koketsu, K. and Kimura, Y., 1960 *J. Cell. Corp. Physiol.* 55: 239.
Tasaki, I., and Takenaka, T. 1964 *Proc. Nat. Acad. Sci. USA* 52: 804.
Hazlewood, C.F. and Nichols, B.L., 1969 *Johns Hopkins Med. J.* 125: 119.
Thomas, R.C. 1972 *Physiol. Rev.* 52: 563.
Ling, G.N. and Fisher, A. 1983 *Physiol. Chem. Phys. & Med. NMR* 15: 369.
- (420) Berthelot, M. and Jungfleisch, H. 1872 *Ann. Chim. Phys.* 26: 396.
Nemst, W. 1891 *Z. physik. Chem.* 8: 110.
- (421) Scheraga, H. A. 1974 *Current Topics Biochem.* 1973: 1.
Finkelstein, A.V. and Ptitsyn, O.B. 1971 *J. Mol. Biol.* 62: 613.
- (422) Ruhland, W. 1909 *Jahrb. wiss. Bot.* 46: 1.
———. 1912 *Jahrb. wiss. Bot.* 51: 376.
Ruhland, W. and Hoffmann, C. 1925 *Planta* 1:1.
- (423) Ling, G.N., Will, S. and Shannon, P. 1969 *Physiol. Chem. Phys.* 1: 355.
- (424) Fischer, E. 1906 *Ber. dtsh chem. Ges.* 39: 530.
———. 1907 *Sitzb. kgl. preuss. Akad. Wiss.* (1907): 35; (1916): 990.
- (425) Ling, G.N., Walton, C., and Bersinger, T.J. 1980 *Physiol. Chem. Phys.* 12: 111.
- (426) Watt, I.C. and Leeder, J. D. 1964 *Trans. Farad. Soc.* 60: 1335.
- (427) Ling, G. N., Neville, M., Shannon, P. and Will, S. 1969 *Physiol. Chem. Phys.* 1: 42.
- (428) Ling, G. N. and Will, S. 1969 *Physiol. Chem. Phys.* 1: 263.
- (429) Ling, G. N. and Will, S. 1976 *Physiol. Chem. Phys.* 8: 115.
- (430) Kolber, A. R. and Stein, N. D. 1966 *Nature* 209: 691.
- (431) Trombitas, C. and Tigyi-Sebes, A. 1979 *Acta Physiol. Acad. Sci. Hung.* 14: 271.

- (432) Edelmann, L. 1983 *Physiol. Chem. Phys. & Med. NMR* 15: 337.
- (433) von Zglinicki, T. 1988 *Gen. Physiol. Biophys.* 7: 495.
- (434) Somlyo, A. V., Gonzales-Serratos, H., Shuman, H., McClellan, G. and Somlyo, A.P. 1981 *J. Cell. Biol.* 90: 577.
- (435) Wood, R.E., Wirth, F. P. and Morgan, H. E. 1968 *Bioch. Biophys. Acta* 163: 171.
- (436) Rossini, F.D., Knowlton, J.W. and Johnston, H.L. 1940 *J. Res. Nat. Bur. Stand.* 24: 369.
- (437) Woessner, D.E. and Snowden, B.S. 1973 *Ann. N.Y. Acad. Sci.* 204: 113.
- (438) Nathanson, A. 1904 *Jahrb. wiss. Bot.* 39: 607; 40: 403.
- (439) Ling, G.N. 1966 *Fed. Proc. (Symposium)* 25: 958.
- (440) Eastman, Geiling and DeLawder 1961 quoted in *Function of the Blood* (Macfarlane, R.G. and Robb-Smith, A.H.T.) Academic Press, New York, Fig. 18 in Chapter 1.
- (441) Hagiwara, S. 1960 in *Electrical Activity of Single Cells* (Y. Katsuki, ed.), Igaku Shoin Ltd, Tokyo, p. 145.
- (442) Matsuda, K. 1960 in *Electrical Activity of Single Cells* (Y. Katsuki, ed.), Igaku Shoin, Ltd., Tokyo, p.283.
- (443) Lassen, U. V. and Rasmussen, B.E. 1978 in *Membrane Transport in Biology* (D.C. Tosteson, ed.), Vol. 1, Springer Verlag., New York, p.201.
- (444) Fischer, E. 1894 *Ber. dtsh. chem. Ges.* 27: 2985.
- (445) Henri, V. 1902 *C.R. Acad. Sci., Paris* 135: 916.
- (446) Dixon, M. and Webb, E.C. 1958 *Enzymes*, Academic Press, New York.
- (447) dark, A.J. 1926 *J. Physiol. (London)* 61: 547.
———. 1933 *The Mode of Action of Drugs on Cells*, 3rd ed., Edward Arnold, London.
———. 1937 *Quart. J. exp. Physiol.* 27: 375.
- (448) Ariens, E.J., van Rossum, J.M. and Simonis, A.M. 1956 *Arzneimittel-Forsch.* 6: 282, 611, 737.
- (449) Bowen, W. J. and Kerwin, T.O. 1955 *Proc. Soc. Exp. Biol. Med.* 89:
- (450) Mommaerts, W.F.H.M. and Green, I. 1954 *J. Biol. Chem.* 208: 833.
- (451) Wakabayashi, M. and Fishman, W.H. 1961 *J. Biol. Chem.* 236: 996.

- (452) Reichard, P., Baldesten, A. and Rutberg, L. 1961 J. Biol. Chem. 236: 1150.
- (453) Ling, G. N. 1964 Texas Report Biol. Med. 22: 244.
- (454) van Rossum, J. M. and Ariens, E. J. 1958 Arch. Intern. Pharmacodynam. 118: 393.
- (455) Kühne, W. 1878 Unters. physiol. Inst. Univ. Heidelberg, 1: 291.
- (456) Cohen, G. N. and Monod, J. 1957 Bact. Rev. 21: 169.
- (457) Saladino, A.J., Bentley, P. J. and Trump, B.F. 1969 Amer. J. Pathol. 54: 421.
- (458) Noonan, T.R., Fenn, W.O. and Haege, L. 1941 Amer. J. Physiol. 132: 612.
- (459) Woods, A. 1820 Athenae Oxonienses, "new" ed. , London 4: col. 628.
- (460) Brisseau de Mirbel, C.F. 1809 *Exposition de la théorie de l'organisation Végétale*, Paris.
- (461) Treviranus, G. R. 1805 Biologie, oder Philosophie der lebenden Natur für Naturforscher und Aerzte, 3: 233, Göttingen.
- (462) Link, H. F. 1809 *Grundlehren der Anatomie und physiologie der Pflanzen*, pp 11-13, Leipzig.
- (463) Wilson, J. M. 1944 "Cellular Tissue and the Dawn of Cell Theory", Isis 35: 168.
- (464) Manuel, F.E. 1968 *A Portrait of Issac Newton*, Belknap Press of Harvard Univ., Cambridge, Mass. Da Capo Press, Plenum, New York (paper-back ed.).
- (465) Solomon, A. K. 1952 J. Gen. Physiol. 36: 57.
- (466) Cremer, M. 1906 Z. Biol. 47: 562.
- (467) Linderstrom-Lang, K.. U. 1924 Compt. rend, trav. lab. Carlsberg, Ser chim 15 No. 7.
- (468) Haber, F. and Klemensiewicz, Z. 1911 Z. Physk. Chem. 78: 228.
- (469) Kern, W. 1948 Makromol. Chemie 2: 279.
- (470) Harkins, W. D. 1945 Science 102: 292.
- (471) Freedman, J. C. 1976 Biochem Biophys Acta 455: 989.
- (472) Cope, F. W. 1967 J. Gen. Physiol. 50: 1353.
- (473) Jardetsky, O. and Wertz, J. E. 1960 J. Amer. Chem. Soc. 82: 318.

- (474) Berendsen, H. J. C. and Edzes, H. T. 1973 *Ann. N.Y. Acad. Sci.* 204: 459.
- (475) Abragam, A. 1961 *The Principles of Nuclear Magnetism*, Clarendon Press, Oxford.
- (476) Cohen, M.H. and Reif, F. 1957 *Solid State Physics* 5: 321.
- (477) Brand, J. C. C. and Speakman, J. C. 1960 *Molecular Structure: The Physical Approach* Edward Arnold, London.
- (478) Ling, G. N. and Zhang, Z. L. 1983 *Physiol. Chem. Phys. & Med. NMR* 15:251.
- (479) Lindblom, G. 1971 *Acta Chem. Scand.* 25: 2767.
- (480) Ling, G.N., Will, S. and Shannon, P. 1969 *Physiol. Chem Phys.* 1: 355.
- (481) Stone, F.W. and Stratta, J.J. 1967 *Encyclopedia of Polymer Science and Technology*, vol. 6, pp.103-145, John Wiley and Sons, Inc., New York p. 113.
- (482) Liebig, J. 1862 *Annalen* 121: 78.
- (483) Davson, H. and Danielli, J.F. 1943 *The Permeability of Natural Membranes*, 2nd ed., Cambridge University Press, London.
- (484) Beatley, E.H. and Klotz, I. M. 1951 *Biol. Bull.* 101: 215.
- (485) Pauling, L. 1960 *The Nature of the Chemical Bond*, 3rd Ed., Cornell Univ. Press, Ithaca, NY.
- (486) Jost, WE. 1960 *Diffusion in Solids, Liquids and Gases*, Academic Press, New York.
- (487) Skriver, W., Maunsbach, A.B. and Jergensen, P.L. 1980 *J. Cell. Biol.* 86: 746.
- (488) Ling, G. N. 1964 *Biopolymers (Biophysics Symposium Issue)* 1: 91.
- (489) Hodgkin, A.L. and Horowicz, P. 1959 *J. Physiol. (London)* 148: 127.
- (490) Ling, G.N. and Schmolinski, A. 1956 *Fed. Proc.* 15: 120.
- (491) Gutknecht, J., Hastings, D.F. and Bisson, M.A. 1978 in *Membrane Transport in Biology*, Vol. 3 , pp. 125-170 (G. Gibiesch ed.) Springer Verlag, New York.
- (492) Brooks, S.C. 1939 *J. Cell. Corp. Physiol.* 14: 383.
———. 1940 *Cold Spring Harbour Symp. Quant. Biol.* 8: 171.
- (493) Chance, B. and Yoshioka, T. 1966 *Arch. Biochem. Biophys.* 117: 451.

- (494) Lardy, H. A. and Graven, S. N. 1965 Fed. Proc. 24: 424.
- (495) Pressman, B.C. 1965 Proc. Nat. Acad. Sci. USA 53: 1076.
- (496) Ling, G.N. 1981 Physiol. Chem. Phys. 13: 29.
- (497) Falcone, A.B. and Hadler, H. I. 1968 Arch. Biochem. Biophys. 124: 91.
- (498) Gylkhandanyan, A. V., Evtodienko, Yu. V., Zhabotinsky, A.M. and Kondrashova, M. N. 1976 FEBS Lett. 66: 44.
- (499) Hopfer, U., Lehninger, A. L. and Lenarz, W. J. 1970 J. Biol. Med. 2: 41.
Ohki, S. 1972 Biochem. Biophys. Acta 282: 55.
MacDonald, R.C. and Bangham, A.D. 1972 J. Memb. Biol. 7: 29.
- (500) Bumstock, G. 1958 J. Physiol. (London) 143: 183.
- (501) Martell, A.E. and Smith, R. M. 1974 *Critical Stability Constants*, Vol. 1, Amino Acids, Plenum Press, New York.
- (502) Ling, G.N., Walton, C. and Ling, M.R. 1979 J. Cell. Physiol. 101: 261.
- (503) Ling, G. N., Walton, C. and Ochsenfeld, M.M. 1983 Physiol. Chem. Phys. & Med. NMR 15:379.
- (504) Abood, L.G., Koketsu, K. and Noda, K. 1961 Amer. J. Physiol. 200: 431.
Koketsu, K. 1966 Pers. Biol. Med. 9: 54.
- (505) Aickin, C. 1986 Ann. Rev. Physiol. 48: 349.
- (506) Taft, R.W. 1953 J. Amer. Chem. Soc. 75: 4231.
- (507) Chiang, M. C. and Tai, T.C. 1963 Sci. Sin. 12: 785.
- (508) Eastoe, J. E. 1955 Biochem. J. 61: 589.
- (509) Chang, T. and Penefsky, H. S. 1973 J. Biol. Chem. 248: 2746.
- (510) Reiser, A. 1959 in *Hydrogen Bonding* (D. Hadzi and H. W. Thompsom, eds.) Pergamon Press, New York, pp. 443-474.
- (511) Kossiakoff, A. and Harker, D. 1938 J. Amer. Chem. Soc. 60: 2047.
- (512) Coulson, C.A. 1959 in *Hydrogen Bonding* (D. Hadzi and H. W. Thompson, eds.) Pergamon Press, New York, pp. 339-360.
- (513) Burawoy, A. 1959 in *Hydrogen Bonding* (D. Hadzi and H. W. Thompson, Eds.), Pergamon Press, New York, pp. 259-276.
- (514) Baur, E. 1913 Zeitschr. f. Elektrochem. 19: 590.

- (515) Loeb, J. and Beutner, R. 1913 *Biochem. Z.* 51: 295, 296.
Beutner, R. 1914 *Z. Physik. Chem.* 87: 392.
- (516) Ling, G.N. and Walton, C. 1975 *Physiol. Chem Phys.* 7: 215.
- (517) Ling, G.N. 1970 *Physiol. Chem. Phys.* 2: 242.
- (518) Michaelis, L. and Perlzweig, W. A. 1927 *J. Gen. Physiol.* 10: 575.
- (519) Ling, G.N. 1967 in *Thermobiology* (A. H. Rose, ed.) Academic Press, New York, pp. 5-24.
- (520) Dawson, W.R. and Schmidt-Nielson, K. 1964 in *Handbook of Physiology* (D.B. Dill, ed) Amer. Physiol. Soc., Washington pp. 481-192.
- (521) Belding, H. S. 1967 in *Thermobiology* (A. H. Rose, ed.) Academic Press, New York, pp. 479-510.
- (522) Hammett, L.P. 1940 *Physical Organic Chemistry*, McGraw Hill, New York.
- (523) Tasaki, I. and Iwasa, K. 1980 *Biol. Bull.* 159: 494.
Tasaki, I. Iwasa, K. and Gibbons, R.C. 1980 *Jap. J. Physiol.* 30: 897.
- (524) Tasaki, I and Byrne, P.M. 1994 *Physiol. Chem. Phys. & Med. NMR* 26: 101.
- (525) Nakao, M., Nakao, T., Yamtzoë, S. and Yoshikawa, H. 1973 *J. Biochem.* (Tokyo) 49: 487.
- (526) Arist. *Metaph.* 983b.
- (527) McKie, D. 1952 *Antoine Lavoisier*, Da Capa Press, a Subsidiary of Plenum Publ. Co., New York.
- (528) Dubos, R. 1950 *Louis Pasteur; Free Lance of Science*, Da Capa Press, a subsidiary of Plenum Publ. Co. New York.
- (529) Bronowski, J. 1973 *The Ascent of Man*, Little, Brown & Co., Boston.
- (530) Ling, G. N. 1994 *Physiol. Chem. Phys. & Med. NMR* 26: 121.
- (531) Weissbluth, M. 1974 *Hemoglobin: Cooperativity and Electronic Properties*, Springer Verlag, New York.
- (532) McBain, J. W. 1932 *The Sorption of Gases and Vapors by Solids*, George Routledge and Sons, London.
- (533) de Boer, J, H, and Zwikker, C. 1929 *Z. Physik. Chem.* B3: 407.
- (534) Brunauer, S., Emmett, P.H. and Teller, E. 1938 *J. Amer. Chem. Soc.* 60: 309.
- (535) Mellon, E.F., Kom, A.H. and Hoover, S.R. 1948 *J. Amer. Chem. Soc.* 70:

3040.

(536) Perutz, M.F. 1969 Proc. Roy. Soc. B173: 113.

(537) von Helmholtz, H. 1881 in: *The Modern Development of Faraday's Conception of Electricity*, The Faraday Lecture, delivered before the Fellows of the Chemical Society in London on April 5, 1881.

(538) Schultze, H.E. and Heremans, J.F. 1966 *Molecular Biology of Human Proteins*, Vol 1, Elsevier Publ. Co., New York, p. 4.

(539) Schatzmann, H, J, 1953 Helv. Physiol. Pharmacol. Acta 11: 346.
Dunham, E.T. and Glynn, I. M. 1961 J. Physiol. (London) 156: 274.
Bonting, S.L. and Caravaggio, L.L. 1963 Arch. Biochem. Biophys 101: 37.
Bonting, S. L. in *Membrane and Ion Transport*, Vol. 1 (E.E. Bittgar, ed.) Wiley-Interscience, New York, p. 257.

(540) Ling, G.N. and Palmer, L. 1972 Physiol. Chem. Phys. 4: 517.

(541) Yang, C.N. 1972 in *Phase Transition and Critical Phenomena* (C. Domb and M.S. Green eds.), Academic Press, New York, pp. 1—5.

(542) Quinke, G. 1898 Ann. Physik 64: 618.

(543) Ling, G. N. 1979 in *The Aqueous Cytoplasm* (A.D. Keith, ed.) Marcel Dekker, New York.

(544) Kom, E.D. 1978 Proc. Nat. Acad. Sci. 75: 588.

(545) Ingber, D.E. and Folkman, J. 1989 in *Cell Shape, Determinants, Regulation and Regulatory Role* (W.D. Stein and F.B. Bronner, eds.) Academic Press, San Diego.

(546) Fischer, M.H. and Moore, G. 1907 Amer. J. Physiol. 20: 350.

(547) Ling, G.N. <<http://www.gilbertling.org/lpl2.htm>>

(548) Lauffer, M.A. 1975 *Entropy-Driven Processes in Biology: Polymerization of Tobacco Mosaic Virus, Proteins and Similar Reactions*, Springer Verlag, New York.

(549) Ling, G.N. and Ochsenfeld, M.M. 1977 Physiol. Chem. Phys. 9: 427.

(550) Ling, G.N. 1957 in *Metabolic Aspects of Transport across Cell Membranes* (Q.R.. Murphy, ed.) Univ. Wisconsin Press, Madison, Wise., pp. 181-186.

(551) Bruno, L.D. 2001 Newsday (Long Island, N.Y.), January 15, p. C-17, Section "Not for Profit."

(552) Haseltine, E. 2000 Discover (Twentieth Anniversary Issue), October Issue, p. 84.

(553) Shute, N., 2001 U.S. News and World Report, February Issue p. 44.

(554) McQueen, A. 2000 The Philadelphia Inquirer June 28, page A4 C.

(555) <<http://project2061.aaas.org/newsinfo/press/rl000627.htm>>

(556) Dawson, R. 1981 *Confucius*, Oxford University Press, Oxford.

(557) Lyster, R.L.J. 1955 Ph.D. Thesis, Cambridge University Cambridge, England. Rossi-Fanelli, A., Antonini, E. and Caputo, A. 1984 Adv. Protein Chem. 19:73.

[Назад к оглавлению](#)
[На страницу "Gilbert Ling"](#)
[На главную страницу](#)