

APPENDIX C

BIOGRAPHICAL CATALOGUE OF SOME MASTER BIOLOGISTS¹

- HIPPOCRATES (460-370 B.C.). Greek: "Father of Medicine." Applied the scientific method in treating disease.
- ARISTOTLE (384-322 B.C.). Greek philosopher, investigator and teacher. Pupil of Plato. Teacher of Alexander the Great. Established the science of Natural History. Writings extensive, "History of Animals," etc. His writings looked upon as authoritative for centuries.
- GALEN (A.D. 131-201). Greek, practiced medicine and taught anatomy at Rome. His "Anatomy" based on information derived from dissection of lower animals and so contained errors. Nevertheless it was taught for centuries.
- VESALIUS, ANDREAS (1515-1564). Belgian; studied at Louvain, Leyden, Paris. Professor of Surgery at Padua. Wrote first good textbook of human anatomy in 1543.
- FABRICIUS, HIERONYMUS (1537-1619). Pupil of Fallopius at Padua. Later professor of Anatomy at Padua and taught William Harvey.
- HARVEY, WILLIAM (1578-1657). Graduate of Cambridge; M.D., Padua. Physician to King Charles I. Lecturer in Anatomy. Discoverer of the circulation of the blood, 1628. Studied embryology also. "Father of Modern Medicine."
- REDI, FRANCESCO (1626-1698). Italian. Experiments in disproof of spontaneous generation.
- MALPIGHI, MARCELLO (1628-1694). Professor at Bologna. Indefatigable investigator. Anatomy of silkworm; Embryological studies; Anatomy of plants.
- SWAMMERDAM, JAN (1637-1680). Dutch. Ardent investigator of minute forms. Devised method of injecting blood vessels, master of minute anatomy of insects.
- HOOKE, ROBERT (1635-1703). English. Brilliant and versatile in physics, mathematics and natural history. First used the word "cell."

¹ The chronological order is departed from at times. This list is by no means complete.

- GREW, NEHEMIAH (1628-1711). English botanist. His "Anatomy of Vegetables," the beginning of plant histology.
- RAY, JOHN (1628-1705). Worked in botany and zoology. The "Ray Society" of London named in honor of John Ray.
- LEEUEWENHOEK, ANTONY VAN (1632-1723). Self-educated. Holland. Microscopic biology. Fellow Royal Society, London.
- HALLER, ALBRECHT VON (1708-1777). Professor Botany, Anatomy and Medicine at Göttingen. Wrote "Elements of Physiology," 1757-1765.
- LINNAEUS, CAROLUS (1707-1778). Professor of Botany at Upsala. His "Systema Naturae" (10th ed. 1758), a comprehensive survey, a model taxonomy in which he introduced the binomial system of nomenclature. Opposed evolution.
- BUFFON, GEORGE, *Comte de* (1707-1778). French naturalist, Superintendent of Jardin du Roi. Author of "Histoire Naturelle." Probably believed in evolution.
- CAMPER, PETER (1772-1789). Dutch. Anatomist. Made a number of discoveries in anatomy.
- HUNTER, JOHN (1728-1793). Scotch. Surgeon. Established great anatomical museum in London.
- WOLFF, CASPAR (1733-1794). Breslau and St. Petersburg. Author of "Theoria generationis," 1759, and "De formatione intestinorum," 1768-1769. Opposed preformation with his epigenesis theory of development.
- SPALLANZANI, LAZZARO (1729-1799). Professor at Modena and Pavia. Experiments in disproof of theory of spontaneous generation.
- DARWIN, ERASMUS (1731-1802). Physician in England. Fellow Royal Society. Author of *Zoonomia*. Argued for evolution.
- DE JUSSIEU, A. L. (1748-1836). Botanist: Natural System of Classification; "Genera Plantarum."
- TREVIRANUS, GOTTFRIED (1776-1837). Germany. One of the first to use word Biology, "Biologie, oder Philosophie der lebenden Natur," 1802.
- LAMARCK, JEAN BAPTISTE DE (1744-1829). French. Jardin des Plantes. Botany, zoology, evolution. "Philosophie zoologique," 1809.
- CUVIER, GEORGES (1769-1832). Baron of France; protégé of Napoleon Bonaparte. Jardin des Plantes. Founder of comparative anatomy and palaeontology. Opposed idea of evolution.
- GOETHE, JOHANN WOLFGANG VON (1749-1832). Poet, philosopher and naturalist. "Versuch die Metamorphose der Pflanzen zu erklären," 1790. Evolutionist.
- SAINT-HILAIRE, GEOFFROY (1772-1844). Jardin des Plantes. "Philosophie Anatomique," 1818. Debated with Cuvier on evolution.

- BAER, KARL ERNST VON (1792-1876). Professor at Königsberg and St. Petersburg. Founded Comparative Embryology.
- MÜLLER, JOHANNES (1801-1858). Professor at Berlin. Comparative Physiology. A master intellect. "Handbuch der Physiologie des Menschen." Inspiring teacher.
- SCHLEIDEN, MATTHIAS (1804-1881). Professor of Botany at Jena. Founder of Cell Theory with Schwann. "Ueber Phytogenesis," 1838.
- SCHWANN, THEODOR (1810-1882). Professor of Anatomy at Liège. (See Schleiden.) "Mikroskopische Untersuchungen," 1839.
- LIEBIG, JUSTUS VON (1803-1873). Chemist. Professor at Munich. "Organic Chemistry in Relation to Agriculture and Physiology," 1840.
- LYELL, CHARLES (1797-1875). Geologist. "Principles of Geology," 1830-1833. This aided Darwin in developing his arguments for the theory of evolution.
- SCHULTZE, MAX (1825-1874). Professor at Halle and Bonn. "Father of Biology," showing that protoplasm is similar in plants and animals.
- DARWIN, CHARLES (1809-1882). Graduated from Cambridge University. Voyage of the *Beagle*, 1831-1836. "Origin of Species," 1859. "Descent of Man," 1871. Darwin established the Theory of Evolution.
- HOOKE, JOSEPH (1817-1911). Contemporary of Darwin. Botanist. His "Flora of British India," appeared in 1872-1879.
- MENDEL, GREGOR (1822-1884). Abbot of monastery at Brunn, Austria. Wrote "Versuch über Pflanzen-Hybriden," 1865. Founder of modern science of Genetics.
- AGASSIZ, LOUIS (1807-1873). Professor of Geology and Zoology at Harvard. Founded Museum of Comparative Zoology at Harvard in 1859. Founded what is known now as the "Marine Biological Laboratory." A great teacher. Opposed to the theory of evolution.
- BERNARD, CLAUDE (1813-1878). Experimental physiologist in Paris. Wrote a book on "Phenomena Common to the Life of Animals and Plants." Made a number of important discoveries in physiology.
- WÖHLER, F. (1800-1882). Chemist. Synthesis of Urea. United organic and inorganic chemistry.
- BALFOUR, F. M. (1851-1882). Embryology and evolution. "Treatise of Comparative Embryology."
- MILNE-EDWARDS, HENRI (1800-1885). Professor at the Sorbonne. "Physiology and Comparative Anatomy," 1857-1880.
- DUBOIS-REYMOND, EMIL (1818-1896). Succeeded Müller as Professor of Physiology at Berlin. Investigated animal electricity. Physico-chemical nature of life.
- GRAY, ASA (1810-1888). Professor of Botany at Harvard. His "Manual of Botany" is a standard Plant Taxonomy.
- LEIDY, JOSEPH (1823-1891). Professor of Anatomy at Pennsylvania.

- "Fresh Water Rhizopods of North America," 1879. "Mammalian Remains in Nebraska," 1853.
- NÄGELI, CARL (1817-1891). Munich. Plant cytology. Abstract speculations.
- FOL, H. (1845-1892). Geneva. Animal cytologist. Mitosis. First to see sperm enter an egg.
- OWEN, RICHARD (1804-1892). Professor of Anatomy at London. British Museum. Anatomy and physiology of the vertebrates. Fossil birds. Opposed idea of evolution. Analogy *vs.* homology.
- HELMHOLTZ, H. (1821-1894). Berlin. Physiological physics of nerves, eye and ear. Invented ophthalmoscope.
- PASTEUR, LOUIS (1822-1895). Professor of Chemistry at Strasburg, Lille, Sorbonne. Director, Pasteur Institute, Paris. Fermentation and Bacteriology.
- LUDWIG, CARL (1816-1895). Professor at Leipzig. Developed graphic method of recording physiological processes.
- HUXLEY, THOMAS HENRY (1825-1895). Investigator in anatomy and palaeontology. Teacher, lecturer and great exponent of the theory of evolution.
- KOELLIKER, ALBRECHT VON (1817-1905). Professor at Würzburg, Embryologist and Histologist, "Handbuch der Gewebelehre," 1852-1893.
- COPE, EDWARD DRINKER (1840-1897). Professor at Pennsylvania. Palaeontologist with U. S. Geological Survey. "Origin of the Fittest," 1886.
- MÜLLER, FRITZ (1821-1897). Author of "Fur Darwin." Elaborated Biogenetic Law. Influenced Haeckel.
- SACHS, JULIUS (1832-1897). Botanist. Made Würzburg world center for study of Botany. Experimental plant physiology.
- EIMER, TH. (1843-1898). Orthogenesis — (Definitely directed evolution.)
- LEUCKART, K. (1822-1898). Morphology of invertebrates: Creator of several phyla.
- MARSH, O. C. (1831-1899). Professor of Palaeontology at Yale. Collections of fossil horses, etc.
- ZITTELL, KARL VON (1839-1904). Professor at Munich. Author of standard textbook on Palaeontology.
- VIRCHOW, RUDOLPH (1821-1903). Professor at Berlin. Author of "Cellular Pathology," 1858.
- GEGENBAUR, CARL (1826-1903). Professor at Heidelberg. Comparative anatomy. "The ultimate aim of comparative anatomy is phylogeny."
- SPENCER, HERBERT (1820-1903). Philosopher; Evolutionist: "System of Synthetic Philosophy."

- HIS, WILHELM (1831-1904). Leipzig. Physiology of embryology. Critic of biogenetic law.
- FLEMING, W. (1843-1905). Stages of Mitosis; Named *chromatin*; Protoplasm a network of fibers; His "pieces of chromatin" afterward named "chromosomes" by Waldeyer.
- KOCH, ROBERT (1843-1910). Professor at Berlin. Relation of Bacteria to disease. Isolation by gelatin culture.
- GALTON, FRANCIS (1832-1911). Heredity and Eugenics. Cousin of Charles Darwin.
- STRASBURGER, E. (1844-1912). Botanist. Jena and Bonn. Plant cytology.
- LISTER, (LORD) JOSEPH (1827-1912). English Surgeon. Antiseptic surgery.
- WALLACE, ALFRED RUSSELL (1822-1913). Naturalist. "Geographical Distribution of Animals," 1876. Contemporary of Darwin and arrived at a theory of evolution by natural selection at about the time Darwin was ready to publish "The Origin of Species."
- WEISMANN, AUGUST (1834-1914). Professor of Zoology at Freiburg. Wrote the "Germ Plasm Theory," 1885. The development of the germ plasm idea focused attention on the chromosomes and laid the basis for work in genetics. Weismann strenuously opposed the inheritance of acquired characteristics.
- BOVERI, TH. (1862-1915). Cytologist. Centrosome is dynamic center of cell activities.
- EHRlich, PAUL (1852-1915). Histology of leucocytes. Intravenous antiseptics; Serology.
- METCHNIKOFF, E. (1845-1916). Director Pasteur Institute, Paris. Phagocytosis.
- FISCHER, EMIL (1852-1919). Great chemist. German. Worked on synthesis of carbohydrates, on proteins, etc.
- HAECKEL, ERNST (1834-1919). Professor of Zoology at Jena. Author of "Generelle Morphologie," 1866. "Die Radiolarien," 1862. "History of Creation," 1911. An ardent evolutionist.
- LOEB, JACQUES (1859-1924). Physiologist. Professor at Bryn Mawr, Chicago, California, and Member of Rockefeller Institute for Medical Research in New York. Career devoted to explaining life phenomena in terms of physics and chemistry. Prolific and profoundly stimulating investigator.
- ROUX, WM. (1850-1924). Selectionist. Phylogeny. Selection within the egg. Founder of experimental embryology.
- GOLGI, C. G. (1844-1926). Pavia. Neurologist. Devised "Golgi Method" of staining nerve cells.
- BATESON, WILLIAM (1861-1926). Distinguished British geneticist.

Author of "Materials for the Study of Variation" and "Mendel's Principles of Heredity."

DEAN, BASHFORD (1867-1928). Paleo-Ichthyology. Established the "Bibliography of Fishes."

NOGUCHI, HIDEYO (1878-1928). Rockefeller Institute, N. Y. Bacteriologist. "Yellow fever."