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THE DOCTOR'S
RECREATION SERIES

CHARLES WELLS MOULTON
General Editor



VOLUME ELEVEN



A BIOGRAPHICAL
CYCLOPEDIA OF
MEDICAL HISTORY

EDITED BY
Charles Wells Moulton.



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A

- ABDALLATIF**, or **Abd-ul-Latif** (1162-1231). A celebrated physician and traveler, and one of the most voluminous writers of the East; was born in Bagdad. An interesting memoir of Abdallatif, written by himself, has been preserved; with additions by Ibn-Abu-Osaiba, a contemporary.
- ABDALMALEK** (about 740). Born at Basra. A Mohammedan doctor, instructor of Harun-al-Rashid, noted for his extraordinary memory. He is the reputed author of the romance of Antar.
- ABERCROMBIE, DAVID** (about 1702). This Scottish physician was sufficiently noteworthy half a century after his (probable) decease to have his *Nova Medicinæ Praxis* reprinted at Paris in 1740. Of this early metaphysician, nothing biographical has, however, come down, save that he was a Scotchman ("Scotus") born at Seaton. He was living early in the 18th century.
- ABERCROMBIE, JOHN** (1780-1844). Born in 1780 at Aberdeen, took his M.D. in Edinburgh (1803), and, establishing a practise there, after Dr. Gregory's death (1821) was recognized as the first consulting physician in Scotland. He is best known by his superficial works on *The Intellectual Powers* (1830) and *The Moral Feelings* (1833). He died suddenly, November 14, 1844.
- ABERCROMBY, PATRICK** (1656-1716?). Was the third son of Alexander Abercromby of Fetterneir in Aberdeenshire, and brother of Francis Abercromby, who was created by James II. Lord Glasford. He was born in Forfar. As throughout Scotland, he could have had there the benefits of a good parish school; but it would seem from after events that his family was Roman Catholic, and hence, in all probability, his education was private. This, and not the unproved charge of perversion from Protestantism in subserviency to James II., explains his Roman Catholicism and adhesion to the fortunes of that king. But, intending to become a doctor of medicine, he entered the University of St. Andrews, where he took his degree of M.D. in 1685. The work with which Abercromby's name is permanently associated is his *Martial Achievements of the Scots Nation*, issued in two noble folios, vol. i, 1711, vol. ii, 1716. The date of his death is uncertain. It has been variously assigned to 1715, 1716, 1720, and 1726, and it is usually added that he left a widow in great poverty. That he lived

in 1716 is certain, as Crawford speaks of him (in his *Peerage*, 1716) "as my worthy friend."

ABERNETHY, JOHN (1764-1831). Surgeon; born in London April 3, 1764, the grandson of the Rev. John Abernethy (1680-1740), an Irish Presbyterian clergyman and controversialist. He was educated at Wolverhampton grammar-school, and in 1779 was apprenticed to the assistant-surgeon at St. Bartholomew's Hospital. In 1787 he was himself elected assistant-surgeon to St. Bartholomew's, and soon after began to lecture. At first, he manifested extraordinary diffidence, but his power soon developed itself, and his lectures at last attracted crowds. In 1813 he was appointed surgeon to Christ's Hospital, in 1814 professor of Anatomy and Surgery to the College of Surgeons, and in 1815 full surgeon to St. Bartholomew's, a post which he resigned in 1829. His practise increased with his celebrity, which the eccentricity and rudeness of his manners contributed to heighten. He died at Enfield, April 28, 1831. Of his works (4 vols. 1830) the most important is his *Constitutional Origin and Treatment of Local Diseases* (1809). See *Life* by George Macilwain (3d ed. 2 vols. 1857).

ABU-BEKR MOHAMMED IBEN TO PHAIL (1100-85). A famous Arabic physician, mathematician, poet, and philosopher. He was born in Andalusia and died in Morocco. His chief extant philosophical work is entitled *Hai ibn Yakzan*, The Living, the Son of the Awake. It depicts the natural progressive development of the human faculties till nature and God are adequately known in virtue of a communion of the human intellect in the divine thought. To secure this communion, positive religion is valuable for the vulgar, but religious doctrines are only exoteric presentations of the mystic truth. Consult: Ritter, *Geschichte der Philosophie* (Hamburg, 1829-31); *English* by Morrison (Oxford and London, 1838-46). Also Munk, *Melanges de Philosophie Juive et Arabe* (Paris, 1859).

ACCUM, FREDERICK (1769-1838). A Westphalian chemist who during 1810-20 greatly promoted the introduction of gas-lighting in England.

ACHARD, FRANZ CARL (1753-1821). A Prussian chemist; born at Berlin, April 28, was the first to turn Marggraff's discovery of the presence of sugar in beet-root to commercial account.

ACKERMANN, JOHN CHRISTIAN GOTTLIEB (1756-1801). A learned physician and professor of medicine; born at Zeulenroda, in Upper Saxony. In 1786 he became professor of medicine at the University of Altorf, in Franconia, occupy-

ing first the chair of chemistry, and then, from 1794 till his death, that of pathology and therapeutics.

ACLAND, SIR HENRY WENTWORTH DYKE (1815-1900).

An English physician; born at Exeter, and educated at Oxford. He was one of the founders of the Oxford University Museum, and in 1859 published, with Ruskin, an account of the aims of that institution. He accompanied the Prince of Wales to America in 1860. In 1894 he tendered his resignation as regius professor of medicine at Oxford, which position he had occupied since 1858. His more important publications include the *Memoir on the Visitation of the Cholera in Oxford in 1854*, and *Village Health* (1884).

ADDISON, THOMAS (1793-1860). Physician; born near

Newcastle, and graduated in medicine at Edinburgh in 1815. He settled in London, and in 1837 became physician to Guy's Hospital. His chief researches were on pneumonia, phthisis, and especially on the disease of the supra-renal capsules, known as *Addison's Disease*.

AEBY, CHRISTOPH THEODOR (1835-85). A Swiss anat-

omist and anthropologist; born in the neighborhood of Pfalz-burg, Lorraine. At Basel and Göttinger he studied medicine. He was made professor of anatomy at Bern in 1863; and received the same degree at the University of Prague in 1884. His fame rests chiefly upon his contributions to anthropology, notably a new craniometric method. He was one of the first men to adduce the effects of the influence of atmospheric pressure on the joints of the human frame. His works embrace: *Untersuchungen über die Fortpflanzungsgeschwindigkeit der Reizung in der quer-gestreiften Muskelfaser*; *Eine neue Methode zur Bestimmung der Schädelform von Menschen und Säugetieren*; *Die Schädel form en des Menschen und der Affen*; *Ueber das Verhältnis der Mikrocephalie zum Atavismus*.

ÆSCULAPIUS. In the *Heathen Mythology*, the god of medicine, was the son of Apollo and the nymph Coronis. He was educated by the centaur Chiron, who taught him the art of healing; and his skill enabled him to cure the most desperate diseases. But Jupiter, enraged at his restoring to life Hippolytus, who had been torn in pieces by his own horses, killed him with a thunderbolt. At Epidaurus, Æsculapius's statue was of gold and ivory, with a long beard, the head surrounded with rays, a knotty stick in one hand, and the other entwined with a serpent; the figure was seated on a throne of the same materials as the statue, and had a dog lying at its feet. The Romans crowned him with

laurel, to represent his descent from Apollo; and the Phliasi-ans represented him as beardless. The cock, raven, and the goat were sacred to this deity. In many places votive tablets were hung up, showing the names of those cured and the diseases of which they were healed by his assistance.

AGASSIZ, JEAN LOUIS RODOLPHE (1807-73). Naturalist; was born at Motier, in the Swiss canton of Freiburg, May 28, 1807, and studied at Bienne, Lausanne, Zurich, Heidelberg, and Munich. He graduated in medicine in 1830, his Latin description of the *Fishes of Brazil* having the year before elicited a warm encomium from Cuvier. In 1831-32 he worked in Paris, and in 1832 accepted a professorship at Neuchâtel. In 1833 he commenced the publication of his *Researches on the Fossil Fishes*, and in 1836 undertook those studies on the glacial phenomena of the Alps whose fruit was his *Études sur les Glaciers* (1840) and his *Système Glaciaire* (1847). In 1839 he published a *Natural History of the Fresh-water Fishes of Central Europe*. In 1840-44 he and his assistants spent the summers at a station on the Alps, and in the following autumn he visited the Scottish Highlands. In 1846-48 he lectured with success in the principal cities of the United States, and in 1848 was elected to the chair of Natural History at Harvard. He spent the winter of 1850-51 in an expedition to the Florida Reefs. In 1851-52 he taught at Charleston, S. C., and lectured at Washington, before the Smithsonian Institution. In 1855-63 he and his daughters conducted a young ladies' school at Cambridge; he declined chairs at Zurich and Paris, and received the Order of the Legion of Honor. Of his *Contributions to the Natural History of the United States*, he lived to issue only four of ten 4to vols. To a Museum of Comparative Zoology, established at Harvard in 1858, Agassiz gave all his collections; and four years of incessant work here so undermined his health that he decided upon a trip to Brazil, ultimately transformed into an important scientific expedition, described in *A Journey in Brazil*. He died at Cambridge, December 14, 1873. See *Life and Correspondence*, edited by Mrs. Agassiz (1886); the monograph by C. F. Holder (1892); and *Life, Letters, and Works*, by Jules Marcou (1896).

AGNEW, CORNELIUS REA (1830-88). An American physician; born in New York City, graduated from Columbia College in 1849, and from the College of Physicians and Surgeons in 1852. In 1858 he was appointed surgeon-general of New York state, and during the Civil War was medical director of the New York Volunteer Hospital. He

was prominent in the United States Sanitary Commission. He assisted in founding the Columbia School of Mines in 1884, founded the Brooklyn Eye and Ear Hospital. He became president of the State Medical Society in 1872, one of the trustees of Columbia College in 1874, and was a professor in the College of Physicians and Surgeons. He was a member of many medical and scientific societies, and contributed much to the literature of the diseases of the eye and ear.

AGNEW, DAVID HAYES (1818-92). An American surgeon and medical writer; born November 24, died, March 22; for many years professor of surgery at the University of Pennsylvania. He was also the operator in several important cases, notably that of President Garfield. He published *Practical Anatomy* (1867); *Anatomy and Its Relation to Medicine and Surgery*; *Principles and Practice of Surgery* (1878), etc.

AIKIN, JOHN (1747-1822). Born at Kibworth, Leicestershire, January 15, 1747; was the son of John Aikin, D.D. (1713-80), tutor from 1757 of Warrington Unitarian Academy. After studying at Edinburgh and London, he took his M.D. at Leyden (1780), and practised in Chester, Warrington, Yarmouth, and London; but in 1789 retired to Stoke-Newington, where he died December 7, 1822. A friend of Priestley, E. Darwin, John Howard, and Southey, he was a voluminous author; his works including *Lives of Howard, Selden, and Usher*; the *General Biography* (10 vols. 1799-1815); and the well-known *Evenings at Home* (6 vols. 1792-95), written in conjunction with his sister, Mrs. Barbauld. His daughter, Lucy Aikin, was born at Warrington, November 6, 1781, and died at Hampstead, January 29, 1864. She was author of *Epistles on Women* (1810); *Memoir of John Aikin, M.D.* (1823); *Memoirs of the Courts of Elizabeth, James I., and Charles I.* (6 vols. 1818-33); and *Life of Addison* (1843). See her *Memoirs* (1864).

AINSWORTH, WILLIAM FRANCIS (1807-96). An English physician, geologist, and Eastern traveller; born at Exeter.

AKAKIA, LE DOCTEUR. The name of a noted French physician of the sixteenth century, (Martin Akakia, Grecized from the French name *sans-malice*), borrowed as a pseudonym by Voltaire in his *Diatribes du Docteur Akakia*. This was a brilliant satire, covering with ridicule Maupertuis and the Berlin Academy, of which he was president. King Frederick II., however, had it publicly burned (1752).

AKENSIDE, MARK (1721-70). Poet and physician; born at Newcastle, November 9, 1721. The son of a butcher, at the age of seven he was accidentally lamed for life in his father's shop. He was destined for the Presbyterian ministry, and in 1739 was sent to study theology at Edinburgh, but soon abandoned it for medicine. He took his M.D. at Leyden in 1744, and practised at Northampton, then at Hampstead, and finally in London. His success as a practitioner was never very great, owing to his haughty and pedantic manner, which Smollett sketches to the life in *Peregrine Pickle*; but at Leyden he had formed an intimacy with Jeremiah Dyson, and this rich and generous friend allowed him £300 a year. He died in London, June 23, 1770, having nine years earlier been appointed one of the physicians to the queen. He contributed verses to the *Gentleman's Magazine* as early as 1737; and in 1744 appeared his *Pleasures of the Imagination*, a didactic poem, begun in his eighteenth year, to which is owing whatever celebrity attaches to his name. In 1772 Dyson published his poems (best ed. by Dyce, with Life, 1834).

ALBERS, JOHANN FRIEDRICH HERMANN (1805-67). A German physician; professor of pathology at Bonn. He established there an asylum for the treatment of insanity and nervous diseases, and was director of the pharmacological cabinet. His atlas of pathological anatomy (Bonn, 1832-62, 287 plates) and books on various branches of medical science were regarded as standard works, and are still useful and interesting.

ALBERT, EDUARD (1841-1900). An Austrian surgeon. He was born at Senftenberg, in Bohemia, and studied medicine at Vienna. In 1873 he was made professor of surgery at Innsbruck. From 1881 until his death he was clinical professor of surgery at Vienna. His published works include: *Beiträge zur Operativen Chirurgie* (Vienna, 1878-80), *Diagnostik der Chirurgischen Krankheiten* (seventh edition, Vienna, 1896); and a text-book of surgery in four volumes, which has passed through several editions. Albert's original researches resulted in valuable contributions to surgical diagnosis, to operative surgery, and to other branches of his profession.

ALBUCASIS, or **Abul-Casim**, or **Abul-Kasim El Zahrâwi** (about 1106). Born at Zahrâ al Tasrif, near Cordova, Spain; died at Cordova. An Arabian physician, author of *Al-Tasrif*, a famous résumé of Arabian medical science. According to some he lived a century earlier. His work was partially translated into Latin and twice into Hebrew.

- ALCMÆON.** A Greek physician and naturalist, who lived in the last century B. C. He was a native of Croton, in Italy, and is said to have been a pupil of Pythagoras. He made important discoveries in anatomy, and was the first to practise dissection. He wrote a book *On Nature*, of which we have fragments.
- ALEXANDER** (about 6th century). A Greek medical writer; born at Tralles in Lydia, in the 6th century.
- ALIBERT, JEAN LOUIS** (1766-1837). Physician to Louis XVIII., of France. As chief physician of the hospital of St. Louis he devoted himself especially to a study of diseases of the skin. His chief work was *Traité Complet des Maladies de la Peau* (1806-27).
- ALLEN, HARRISON** (1844-87). Anatomist; born in Philadelphia. He graduated M.D. at the University of Pennsylvania, 1861; was assistant surgeon in the United States army, 1862-65; professor of comparative anatomy, and medical zoology in the University of Pennsylvania, 1865-78, and of physiology, 1878-95. He was the author of numerous articles and books on the subjects connected with his professorship, and of *Studies in the Facial Region* (1874); *Analysis of the Life Form in Art* (1875); *System of Human Anatomy* (1880).
- ALLEN, JOHN** (1771-1843). Born near Edinburgh; took his M.D. there in 1791; traveled with Lord and Lady Holland in France and Spain (1801-5), and was warden of Dulwich College (1811-20), and then its master. He wrote 41 articles for the *Edinburgh Review* and *The Rise of the Royal Prerogative* (1830).
- ALSTON, CHARLES** (1683-1760). A botanical and medical writer; was born in the west of Scotland. He was a man of great ability, and an assiduous student of science. His most valuable work is his *Lectures on Materia Medica*.
- ALTON, JOHANN SAMUEL EDUARD D'** (1803-54). A German anatomist, son of the anatomist and archæologist Joseph Wilhelm Eduard d'Alton. He studied medicine at Bonn, and became professor of anatomy at the Academy of Arts in Berlin in 1827. In 1834 he was made professor of anatomy and physiology at Halle. His writings include: *Handbuch der menschlichen Anatomie* (Leipzig, 1848-50); *De Monstris* (Halle, 1853); and *De Monstrorum Duplicium Origine* (Halle, 1849).
- ALTSCHUL, ELIAS** (1812-65). An Austrian physician of Jewish extraction. He was born at Prague, and studied medicine, graduated at the University of Vienna in 1832.

He became professor of medicine at the University of Prague in 1848, and in 1853 founded the first homeopathic magazine in Austria, under the title of *Monatsschrift für Theoretische und Praktische Homöopathie*. He introduced homeopathy at the University. His principal works are: *Dictionnaire de médecine oculaire* (Vienna, 1856, 2 volumes); *Lehrbuch der Physiologischen Pharmacodynamik* (Prague, 1850-52); *Das Therapeutische Polaritätsgesetz* (Prague, 1852).

AMATUS, LUSITANUS (1511-68). A Portuguese physician, of Hebrew descent. He is said to have been the second author to describe the valves in the veins. He wrote an account of seven hundred remarkable cases in medicine and surgery (1551-66).

AMBLER, JAMES MARKHAM MARSHALL (1848-81). Surgeon and Arctic explorer; born in Virginia; died in the Lena Delta, Siberia. Educated at Washington and Lee University and the Medical College of the University of Maryland; he practised medicine in Baltimore, 1870-74; entered the navy as assistant surgeon, 1874; and was selected as volunteer for that post to the "Jeanette" arctic expedition under George W. De Long, 1879. When their vessel sank, June 13, 1881, he accompanied his chief along the Lena, and was alive at the date of the last entry in De Long's journal, October 30, 1881, but probably died the following day. His remains were discovered by Chief Engineer Melville, March 23, 1882. Upon his body were found memoranda on *Ice Formed by Sea Water*, and *Remarks on Snow Crystals*, published in De Long's Journal (Boston, 1883).

AMMAN, JOHANN KONRAD (1669-1724). A Swiss physician; born at Schaffhausen, Switzerland. In 1692 he published an essay, entitled *Surdus Loquens* (the deaf mute speaking), in which he gave an account of the results of his efforts in teaching a girl deaf and dumb from birth to articulate. He made no mystery of his process, but invited those who found anything difficult or indistinct in his explanations to apply to him, "who, according to the light granted him, will refuse nothing to any man." In 1700 he published another essay, entitled, *Dissertation upon Speech*. These two works were of great value to Heinicke, Braidwood, and De l'Epee, who at a later period organized schools for the instruction of mutes.

AMMAN, PAUL (1634-91). A physician and botanist; born at Breslau, August 30. In 1662 he received the degree of doctor of physics from the University of Leipsic, and in 1664

was admitted a member of the society *Natura Curiosorum*, under the name of *Dryander*. He died February 4.

AMUSSAT, JEAN ZULEMA (1796-1856). A French surgeon; entered the army, was assistant surgeon under Esquirol in the Salpêtrière Hospital, and prosector at the Paris Faculty of Medicine. He improved, and invented many surgical instruments, and was the first to show the importance of torsion of arteries in hemorrhage. He wrote on the nervous system, lithotomy, etc. An operation for opening the large intestine at a point where it is not covered with peritoneum was perfected and first practised by Amussat. It is still performed and it bears his name. Among his publications are researches regarding the nervous system (1825) and a memoir on the torsion of arteries (1829), the latter winning a prize from the Institute.

ANAXILAUUS, of Larissa. A physician and Pythagorean philosopher, banished from Rome by Augustus, B. C. 28, on the charge of practising the magic art. This accusation appears to have originated in his superior skill in natural philosophy, by which he produced effects that the ignorant attributed to magic. (Euseb., *Chron. ad Olymp.* clxxxviii; St. Iren. i, 13; Plin. xix, 4, xxv, 95, xxviii, 49, xxxii, 52, xxxv, 50.)

ANDERSON, ROBERT (1750-1830). Editor of the *British Poets*; for the last forty years of his life lived in Edinburgh.

ANDRAL, GABRIEL (1797-1876). A distinguished French physician and pathologist; born in Paris. In 1827 he was called to the chair of hygiene, in 1830 to that of pathology, in the University of Paris. Andral may be said to have been the first to apply an analytical and inductive method of pathology. His *Medical Clinic* (1824) established his reputation, and his *Summary of Pathological Anatomy* (1829) was equally successful. Other works of importance are his *Essay on Pathological Hæmatology* (1843); *Course in Pathology—Interne*; and *Investigations into the Modification of the Relative Proportions of Hæmatic (Blood) Principles*.

ANDREWS, THOMAS (1813-85). An Irish chemist and physicist; born at Belfast. He studied medicine and the physical sciences at Glasgow, Paris, Edinburgh, and Dublin. After practising medicine for several years in his native city, he became, in 1845, professor of chemistry at Queen's College, which position he resigned in 1879. Andrews carried out a number of important researches on the heat developed during various chemical transformations, and on the nature of ozone. His most important contribution to

science, however, was the discovery (1861) of the continuity of the liquid and gaseous states. He was the first to find that for every gas there is a temperature (called the critical temperature) above which the gas cannot be liquefied, no matter how great the pressure exerted upon it. Below that temperature the gas may be partly liquefied, gas and liquid being separated by the surface of the latter. Precisely at the critical temperature, however, the surface of separation disappears, and the substance enters into homogeneous state, combining the properties both of the liquid and the gaseous states. This continuity of state renders it possible to extend to liquids the laws of gases, and thus establishes an intimate relationship between the properties of matter in the two states.

ANDROMACHUS. A physician of the emperor Nero; he is called "the elder," to distinguish him from his son. Andromachus was the first to bear the title of "Archiatr," or chief physician. He was the discoverer of a celebrated medicine and antidote called from him "*theriaca Andromachi*."

ANEL, DOMINIQUE (1679-1730). A French surgeon. He introduced improvements in the operations for *ancurism* and *fistula lacrymalis*.

ANTOMMARCHI, FRANCESCO (1780-1838). Napoleon's physician from 1818; a native of Corsica, and was already an anatomist of some celebrity at Florence, when he was induced to go to St. Helena. Napoleon received him with mistrust, but ultimately gave him his full confidence, and at his death left him 100,000 francs. After his return to Europe, he published *Les Derniers Moments de Napoleon* (1823). During the Polish revolution he did duty at Warsaw as director of military hospitals. He afterwards went to the West Indies, and died in Cuba.

ARBUTHNOT, JOHN (1667-1735). Physician and wit. This much-loved friend of Swift and Pope, was born at Arbuthnott, Kincardineshire, April 29, 1667. His father was the (Episcopal) parish minister, who was ejected after the Revolution. One of John's brothers fought under Dundee at Killiecrankie, and another in Mar's rebellion; John was, according to Chesterfield, a Jacobite by prejudice, a republican by reflection and reasoning. He studied at Aberdeen and University College, Oxford, but took his M.D. degree at St. Andrews (1696). Settling in London, where before this he had taught mathematics, in 1697 he attracted notice by his *Examination of Dr. Woodward's Account of the Deluge*. Accident called him into attendance on Prince

George of Denmark; in 1705 he was appointed physician to the queen, and her death in 1714 was a severe blow to his prosperity. In 1715, along with Pope, he assisted Gay in *Three Hours After Marriage*, a farce that yet proved an absolute fiasco. He pronounced the Harveian oration in 1727, and died February 27, 1735. Utterly careless of literary fame, Arbuthnot was the chief, if not the sole author of the brilliant *Memoirs of Martinus Scriblerus*, first published in Pope's works (1741); and his too was the celebrated *History of John Bull* (1712). See his *Life and Works*, by G. A. Aitken (1892).

ARCHIGENES. A Greek physician; a native of Apamea in Syria, who practised in Rome in the time of Trajan, 98-117 A. D. He was the most celebrated of the eclectics and was the author of a treatise on the pulse, to which Galen added a commentary.

ARETÆUS (about 100 A. D.). A Greek physician of Cappadocia, considered to rank next to Hippocrates. The first four books of his great work, preserved nearly complete, treat of the causes and symptoms of diseases; the other four, of the cure. There is an edition by Adams (1856), and an English translation (1837).

ARGAND, AIME (1755-1803). Physician and chemist; inventor of the *Argand lamp*; born at Geneva, and lived for a time in England.

ARMSTRONG, JOHN (1709-79). Physician and poet; born about 1709, in Castleton manse, Liddesdale, Roxburghshire. He took the Edinburgh M.D. in 1732, and soon after commenced practise in London. In 1736 he published a nauseous poem, *The Economy of Love*; in 1744 his principal work, *The Art of Preserving Health*, a didactic poem in four books. In 1746 he was appointed physician to the London Soldiers' Hospital, in 1760 physician to the forces in Germany, whence he returned on half-pay in 1763, to resume practise. With Fuseli, the painter, he made a continental tour (1771); he died in London from a fall, September 7th. The friend of Thomson, Mallet, Wilkes, etc., Armstrong seems to have been a reserved, indolent, and splenetic man, "who quite detested talk;" kind-hearted withal, and frugal.

ARMSTRONG, JOHN (1784-1829). Physician; born May 8, at Ayres Quay, near Bishop-Wearmouth, where his father was superintendent of glass-works. He graduated M.D. of Edinburgh (1807), commenced practise at Bishop-Wearmouth, in 1811 was chosen physician to Sunderland Infirmary, and, having greatly extended his reputation by a

work on *Typhus* (1816), in 1818 removed to London, where from 1819 to 1824 he was physician to the Fever Hospital. See his *Life* by Dr. Boott (2 vols., 1833). His son, John Armstrong (1813-56), in 1853 became bishop of Grahams-town.

ARNOTT, NEIL (1788-1874). A Scotch physician; was born at Arbroath, the son of a Catholic farmer, and died in London, March 22, having from 1811 till 1855 carried on a large practise there. In 1832 he invented the water-bed; and his *Warming and Ventilating* (1834) describes the Arnott Stove and Arnott Ventilator.

ASCLEPIADES (about 100 B. C.). A Greek physician; born at Prusa, in Bithynia, who flourished during the early part of the 1st century B. C. He seems to have wandered about as a not very successful teacher of rhetoric before he finally settled at Rome, where, by the practise of medicine, he had risen in Cicero's time to considerable fame and wealth.

ASELLIO, GASPARO (1581-1626). An Italian physician; discoverer of the lacteal vessels.

ASPINWALL, WILLIAM (1743-1823). An American physician; born at Brookline, Mass. He studied medicine in Philadelphia, and practised in his native town. He served as surgeon with the Revolutionary army, and later became interested in the subject of vaccination and established that preventive in American practise.

ASTRUC, JEAN (1684-1766). A French medical professor who by a work on Moses founded the modern criticism of the Pentateuch.

ATKINS, JOHN (1685-1757). An English surgeon who, in 1721, accompanied the ships "Swallow" and Weymouth" on a voyage to West Africa and America, returning in 1723. He published the *Navy Surgeon* (1732), and *A Voyage to Guinea, Brazil, and the West Indies* (1735).

AUENBRUGGER, VON, (or Auenbrugg) Leopold (1722-1809). A Viennese physician who introduced the method of percussion diagnosis—that is, the method of applying the ear to the chest and noting the sounds that follow a stroke of the hand on the patient. He published the results of his important investigation in a treatise entitled *Inventum Novum ex Percussione Thoracis Humani Interni Pectoris Morbos Detegendi* (1761), which marks an epoch in the modern history of medicine. The book attracted little attention until it was translated and illustrated by Corvisart in 1808. He also wrote two treatises on insanity.

AVE-LALLEMANT, ROBERT CHRISTIAN BERTHOLD

(1812-84). A German physician and traveler, brother of Friedrich Christian Benedict Avé-Lallemant. He practised medicine for many years at Rio Janeiro. His principal works are *Reise durch Südbrasilien* (1859); *Fata Morgana* (1872), and *Wanderungen durch die Pflanzenwelt der Tropen* (1880).

AVENZOAR—(properly *Ibn Zohr*, c. 1072-1162). Arabian physician and author on medicine at Seville in Spain; praised by his pupil Averroes.

AVICENNA (980-1037). Arab philosopher and physician; born near Bokhara, was physician to several sultans, and for some time vizier in Hamadan, in Persia, where he died in 1037. His philosophy was Aristotelianism modified by Neoplatonism; his medical system was long the standard. See Forget's edition of his *Book of Theorems* (Leyden, 1892).

B

BABINGTON, BENJAMIN GUY (1794-1866). Orientalist; was born in Guy's Hospital, and was physician there 1837-55.

BABINGTON, WILLIAM (1756-1833). An Irish physician and mineralogist, who lived in London.

BACHE, BENJAMIN FRANKLIN (1801-81). An American surgeon; great-grandson of Benjamin Franklin. He established, at New York, a laboratory which supplied the medical department of the navy, and rendered important service to the Union armies during the Civil War, by running the laboratory at his own expense.

BACHE, FRANKLIN (1792-1864). Physician and chemist; son of Benjamin Franklin Bache, born in Philadelphia October 25; died there March 19. He received his medical diploma from the University of Pennsylvania in 1814, and was appointed surgeon in the army. In 1816 he began the practise of his profession in his native city; from 1826 to 1832 he was professor of chemistry in Franklin Institute; from 1831 to 1841, professor of chemistry in the Philadelphia College of Pharmacy, and from 1841 to 1864 was professor of chemistry in Jefferson Medical College. He was president of the American Philosophical Society in 1854 and 1855, and of the Deaf and Dumb Asylum Corporation at the time of his death. He was the author, compiler and editor of a number of standard works on chemistry and cognate subjects, and a large contributor to scientific journals. In conjunction with Dr. George Wood he prepared a *Pharmacopæia*, the basis of the present *United States Dispensatory*.

BAGLIVI, GIORGIO (1669-1707). Italian physician; born in Ragusa, Sicily; died in Rome. He became a disciple of the celebrated physiologist and anatomist, Malpighi, was appointed professor of medicine in the College de Sapienza, Rome, by Pope Clement XI., and afterward became professor there of anatomy. In opposition to the system known as Galenism in medicine, he founded that of solidism, which locates all disease in the solid portions of the human anatomy. His principal writings were published under the title of *Opera Omnia Medico-Practica et Anatomica* (1704).

BAIKIE, WILLIAM BALFOUR (1825-64). Traveler, naturalist, and philologist, was born at Kirkwall, Orkney, August 27, and, having studied medicine in Edinburgh, in 1848 became a naval surgeon. He was appointed surgeon and naturalist to the Niger expedition in 1854, and, succeeding through the captain's death to the command of the *Pleiad*, he penetrated 250 miles higher than any previous traveler; but in his second expedition of 1857, the *Pleiad* was wrecked, and he was left to continue his work alone. He founded Lukoja, at the junction of Quorra and Benue (now military headquarters of the Royal Niger Company), and within five years had opened the navigation of the Niger, constructed roads, collected a native vocabulary, and translated parts of the Bible and Prayer-book into Hausa. He died at Sierra Leone, December 12.

BAILLARGER, JULES GABRIEL FRANÇOIS (1809-91). A French physician; born at Montbazon (Indre-et Loire). He devoted himself principally to mental disorders, and in 1842 obtained a prize from the Academy of Medicine for his admirable essay entitled *Des hallucinations, des causes qui les produisent et des maladie qu'elles caractérisent*, published in Vol. XIII. of the *Mémoires* of the society. In association with Longet and Cerise, he founded in 1843 a review especially devoted to the study of nervous affections and mental diseases, under the title *Annales médico-psychologiques du système nerveux*. In recognition of his splendid services during the second outbreak of the cholera in 1849 Baillarger was decorated with the medal of the Legion of Honor.

BAILLIE, MATTHEW (1761-1823). Anatomist, brother of Joanna Baillie, was born in Shotts manse, October 27. His mother was a sister of the great anatomists, William and John Hunter; and Matthew, after seven years at Glasgow and Oxford (1773-80), studied anatomy under his uncle William, and in 1783 succeeded to his practise and lectureship. Working often sixteen hours a day, he made a very large income—one year, £10,000—so that he purchased the estate

of Duntisborne in Gloucestershire, and at his death there, on September 23, left a fortune besides of £80,000. See *Life* by Wardrop, prefixed to his *Works* (2 vols. 1825), the most important of which, on *Morbid Anatomy*, was published in 1795.

BAILLOU, GUILLAUME DE (1538-1616). A French physician. He was appointed by Henry IV. first physician to the Dauphin in 1601, and is reputed to have been the first to make known the nature of croup. He wrote *Adversaria medicinalia*, etc.

BALARD, ANTOINE JEROME (1802-76). A French chemist. He was born at Montpellier, and died in Paris. He began his career as a pharmacist, but was subsequently appointed professor of chemistry at the Sorbonne and at the Collège de France, Paris. In 1868 he was made Inspector-General of Superior Instruction. Balard carried out a number of interesting investigations both in pure and applied chemistry, but is best known as the discoverer of the element bromine, which is found in the mother-liquors remaining after the extraction of common salt from seawater.

BALFOUR, JOHN HUTTON (1808-84). A celebrated botanist, was the author of numerous works upon botany: *Class-book of Botany*; *Phyto-theology, or Botany and Religion*; *The Plants of Scripture*; and *Elementary Botany for Schools*. Dr. Balfour was professor of botany in the University of Glasgow from 1841 to 1845, when he migrated to Edinburgh University, and regius keeper of the Royal Botanic Garden and Queen's Botanist for Scotland. For thirty years (until 1877) he was Dean of the Medical Faculty of the University of Edinburgh, and was afterwards assessor of that university.

BARBEU-DUBOURG, JACQUES (1709-1779). Born in Mayenne, February 12; died at Paris, December 14. A French physician, naturalist, and philosophical writer. He wrote botanical and medical works, *Petit code de la raison humaine* (1774); *Chronographie* (1753); *Le calendrier de Philadelphie* (1778), etc.

BARCLAY, JOHN (1760-1826). Scottish anatomist; born in Perthshire, died in Edinburgh. He studied divinity and was licensed as a preacher at Dunkeld. In 1789 he commenced the study of anatomy, and graduated in 1796, when he visited London and studied under Dr. Marshall. On his return to Edinburgh in 1797, he gave lectures on anatomy. He published several works on subjects connected with the sciences of medicine and surgery; he also made some effort

toward reforming the system of nomenclature then in use among anatomists. He bequeathed his valuable anatomical collection to the Royal College of Surgeons of Edinburgh, where it is known as Barclayan Museum. He published *Description of the Arteries of the Human Body* (1812).

BARD, SAMUEL (1742-1821). An American physician. He was born in Philadelphia and educated at Columbia College and the Edinburgh Medical School. He organized the medical school at Columbia College, and became dean of the faculty. While New York was the seat of the Federal Government, he was Washington's family physician. In 1813 he became president of the College of Physicians and Surgeons in New York. His published works comprise a study of the diseases of sheep, *The Shepherd's Guide* (1807); a treatise on *Angina Suffocativa*, and a *Manual of Midwifery* (1807).

BARKER, FORDYCE (1818-91). Physician, and writer on medical subjects; born at Wilton, Maine, May 2; died in New York City May 30. He was graduated at Bowdoin College in 1837, and received his medical education in Boston and Paris, and began to practise in Norwich, Connecticut. Having settled in New York in 1850, ten years later, he became obstetrical physician and professor of midwifery at Bellevue Hospital Medical College, New York City. He had held similar positions in the Medical School at Brunswick, Maine, and in the New York Medical College. He was president of the New York Academy of Medicine, received many foreign honors, and had a very lucrative practise. He wrote standard treatises on *Seasickness* and *Puerperal Diseases*.

BARNES, JOSEPH K. (1817-83). American surgeon; born in Philadelphia; died in Washington, D. C. He was educated in the medical department of the University of Pennsylvania; became assistant surgeon in the army in 1840, and served at various posts through the Mexican War. At the beginning of the Civil War he was summoned from Oregon and assigned to duty in the office of surgeon-general. In 1863 he was appointed a medical inspector, with the rank of colonel, and in September of the same year was promoted to brigadier-general. In 1865 he was breveted major-general, United States Army. He was surgeon-general of the army from 1864 till 1882, when he retired.

BARRY, MARTIN (1802-55). Physician and animal embryologist; born at Fratton, Hampshire, England; died at Beccles, in Suffolk. He received his medical education in London, and at the University of Edinburgh, receiving at

the latter the degree of M.D. in 1833. His observations of the penetration of spermatozoa into the ovum of the segmentation of the yolk of mammals were very important additions to the knowledge of animal embryology. Dr. Barry acted as house-surgeon to the Edinburgh Royal Maternity Hospital, and benevolently gave his professional services to the poor.

BARTHEZ, PAUL JOSEPH (1734-1806). A celebrated French physician. He studied medicine at Montpellier, became professor in the university in 1761, and acquired European renown as a practitioner and lecturer. In his principal work, *Nouveaux éléments de la science de l'homme* (1778), he set forth a new theory of life. According to this, there is in the living organism a *vital principle*, which should be distinguished, on the one hand, from the conscious and thinking mind; on the other, from the physical forces producing material transformations in the body. The life of each separate organ is but a *modus*, a particular manifestation of the "vital principle," and should not be regarded as a component part of the latter. Barthez was a keen thinker; he produced no experimental facts that might render his hypothesis immediately valuable to the biologist; yet his enlightened views had the effect of imparting a new and powerful impulse to the progress of science.

BARTHOLIN, KASPER (1585-1629). Born at Malmö, Sweden, February 12; died at Copenhagen, July 13. A Danish physician and scholar. He became professor of oratory in the University of Copenhagen in 1611, of medicine in 1615, and of theology in 1624. He wrote a text-book on anatomy which was highly esteemed in the 17th century, *Institutiones anatomicæ* (1611).

BARTHOLIN, THOMAS (1616-80). Born October 20; died December 4. A Danish physician and scholar, son of Kasper Bartholin. He was professor of mathematics in the University of Copenhagen in 1646, and of medicine 1647-61. He wrote on anatomy and medicine, and re-revised (1641) his father's *Institutiones anatomicæ*.

BARTLETT, ELISHA (1805-55). American physician and author; born in Smithfield, R. I., and died there. He graduated from the medical department of Brown University in 1826, and delivered the course of lectures on pathological anatomy at the Berkshire Medical Institute, in Pittsfield, Mass., in 1832. In 1836 or 1837 he was elected the first mayor of Lowell. He subsequently lectured at Dartmouth College, and in Transylvania University and the universities of Maryland and New York. In 1851 he became professor

of materia medica and medical jurisprudence in the College of Physicians and Surgeons in New York, which place he held until his death. He published *Essay on the Philosophy of Medical Science* (1844); *Fevers of the United States* (1850); and a volume of poems, entitled *Simple Settings in Verse for Portraits and Pictures in Mr. Dickens' Gallery* (1855).

BARTLETT, JOSIAH (1729-95). Physician and statesman; first governor of New Hampshire; was born at Amesbury, Massachusetts, November 21; died in New Hampshire, May 19. He studied and practised medicine; discovered and applied new remedies. In 1765 he was a delegate to the legislature. He was a zealous Whig, and as a member of the Continental Congress, was the first to vote for the Declaration of Independence and the second to sign it. Dr. Bartlett was appointed general naval agent (1776); elected to Congress (1778); successively chief justice of the court of common pleas, muster-master of troops, justice of the superior court, chief justice, and was three times chosen governor of New Hampshire, the governorship of which state was his last office.

BARTON, BENJAMIN SMITH (1766-1815). An American naturalist, who was the first professor of botany and natural history in a college in the United States. He was born in Pennsylvania, studied for two years at Edinburgh, and afterwards graduated at Göttingen. He settled at Philadelphia, and soon obtained a considerable practise. In 1789 he was appointed to the professorship above mentioned in Philadelphia College; he was made professor of materia medica in 1795, and on the death of Dr. Rush in 1813 he obtained the chair of practical medicine. In 1802 he was chosen president of the American Philosophical Society. Barton was the author of various works on natural history, botany, and materia medica. By his lectures and writings he may be said to have founded the American school of natural history.

BASEILHAC, JEAN (1703-81). A French surgeon, better known as Frère Côme. He was educated at the Hôtel-Dieu, Paris, and for some time was physician in ordinary to the Archbishop of Bayeux. He invented the "trocar," used in cystotomy, and wrote *Recueil de pièces importantes concernant la taille faite par le lithotome caché* (1751), and *Nouvelle méthode d'extraire la pierre de la vessie urinaire par dessus le pubis* (1779).

BASIL, L. BASILIUS (—1818). A Bulgarian physician and

monk, the leader of the heretical sect of the Bogomiles. He was put to death by burning.

- BASS, GEORGE** (—1812. A naval surgeon who in 1796-98 explored the strait that bears his name between Tasmania and Australia. He died a South American miner.
- BASTWICK, JOHN** (1593-1654). A Puritan doctor of Colchester, who under Laud lost his ears in the pillory, and was imprisoned (1637-40).
- BATTEY, ROBERT** (1828-95). Born at Augusta, Ga., November 26; died at Rome, Ga., November 8. An American physician and surgeon. He was professor of obstetrics in the Atlanta Medical College (1873-1875), and editor of the *Atlanta Medical and Surgical Journal* (1873-76). He performed in 1872 what has since been known as Battey's operation for the removal of the ovaries.
- BAUDELOCQUE, JEAN LOUIS** (1746-1810). Born at Heilly, Picardy; died at Paris. A French surgeon. He studied under Solayrès, and became accoucheur of the Hospital de la Maternité. Author of *L' Art des Accouchements* (1781).
- BAUDENS, JEAN BAPTISTE LUCIEN** (1804-57). Surgeon; born at Aire, Pas-de-Calais, April 3; died at Paris, December 3. He became surgeon in the French army in Algeria, in 1830, where he founded a hospital in which he taught surgery and anatomy for nine years. He returned to France in 1841; becoming director of the military hospital of Val-de-Grâce, and serving as member of the sanitary commission of the army of the Crimean War. He wrote *Nouvelle méthode des amputations* (1842), and *La guerre de Crimée*, etc. (1857).
- BAUME, ANTOINE** (1728-1804). A French chemist, known for his discoveries in applied chemistry. He became professor in the college of pharmacy in Paris, and founded a large establishment for the preparation of drugs. He published many papers on the application of scientific principles to useful purposes in the arts and manufactures. Among his inventions and improvements were processes for bleaching, purifying saltpetre, manufacturing sal-ammoniac, etc. His publications include: *Eléments de pharmacie* (1762) and *Chimie expérimentale et raisonnée* (3 vols., 1773). Baume's areometer is still in common use in laboratories.
- BAUMGARTNER, KARL HEINRICH** (1798-1886). Born at Pforzheim, Baden, October 21; died at Baden-Baden, December 11. A noted German physiologist, professor of clinical medicine at Freiburg 1824-62. He was the author of

Beobachtungen über die Nerven und das Blut (1830); *Lehrbuch der Physiologie* (1853), etc.

BAYLEY, RICHARD (1745-1801). American physician; born in Fairfield, Conn.; died on Staten Island, N. Y. After studying medicine in England, chiefly in the London hospitals and under Dr. Hunter, he returned to America in 1776 as a surgeon in Gen. Howe's army, but settled in New York the following year. He was the first professor of anatomy in Columbia College (1792), and for a time health officer of the port of New York, where his vigorous advocacy of proper quarantine laws was finally successful. A careful student of his profession, he suggested a new method of treatment for croup, and maintained (1797) that in its origin, yellow fever was due to local causes and was not contagious. He published: *Cases of the Angina Tracheatis, with the Mode of Cure* (1781); *Essay on the Yellow Fever* (1797); *Letters on Yellow Fever* (1798).

BEARD, GEORGE MILLER (1839-83). American physician and hygienic writer; born in Mortville, Conn.; died in New York. He made a specialty of the study of stimulants and narcotics, hypnotism, spiritualism, etc. Among his works were: *Our Home Physician* (1869); *Eating and Drinking* (1871); *Stimulants and Narcotics* (1871); *American Nervousness* (1881); *Sea-sickness* (1882).

BEAUMONT, WILLIAM (1785-1853). An American surgeon, born at Lebanon, Conn. He is noted for discoveries in the processes and laws of digestion, made in watching the operations of the stomach in the case of Alexis Saint Martin. On June 6, 1822, Saint Martin, then supposed to be 18 years old, while at Mackinac, Mich., was accidentally shot, receiving the entire charge of a musket in his left side, the muzzle of the gun being about three feet from his body. This discharge tore away portions of his clothing, fractured two of his ribs, lacerated his lungs, and lodged in his stomach. Dr. Beaumont, who was then stationed at Mackinac as a surgeon in the United States Army, restored Saint Martin to health within a year, though the aperture made by the shot was never closed. Two or three years afterward, Beaumont commenced a series of experiments upon the stomach of the young man, studying its operations and secretions, the action of the gastric juice, etc. These experiments he continued from time to time, his patient presenting the spectacle of a man enjoying good health, appetite, and spirits, with an opening in his stomach through which the action of that organ could be satisfactorily noted from the exterior. Beaumont was the first to obtain the

gastric juice from a living human being, and he demonstrated, beyond a doubt, its chemical properties and digestive powers. He published the results of his experiments in 1833. Afterwards he resigned from the army, and practised medicine in Saint Louis, Mo., until his death.

BECHER, JOHANN JOACHIM (1635-82). German chemist; born in Speyer. He traveled and resided in various parts of Germany, Holland, Italy, Sweden, and Great Britain, investigating Cornish and Scotch mines. He wrote a number of works on chemistry, the chief of which is entitled *Physica Subterranea*. In it he expounds his views on the composition of inorganic bodies, the constituents of which, according to him, are three earthy principles, the vitrifiable, the combustible, and the mercurial. The metals consist of these three earths in different proportions, and whenever a metal is calcined the combustible and mercurial earths are expelled, and the vitrifiable earth forms the residual calx. When these principles are combined with water different salts are formed, and a fundamental acid, which exists in all the others. This theory was subsequently developed by Stahl, who, by means of the principle of phlogiston explained not only the calcination of metals, but the phenomena of combustion in general.

BECK, LEWIS CALEB (1798-1853). An American physician, chemist and mineralogist, born in Schenectady, N. Y. He was graduated at Union College, was professor of chemistry in Rutgers College, and later in Albany Medical College. He was the author of a number of books and papers on botany and chemistry, and of an elaborate report on the mineralogy of New York, based upon his researches as mineralogist of the New York Geological Survey of 1835-41, and published as one of the volumes of the *Natural History of the State of New York* (1842).

BEDDOES, THOMAS (1760-1808). Physician, born at Shifnal, Shropshire; passed from Bridgnorth grammar-school to Pembroke College, Oxford, and studied medicine at Edinburgh and London. In 1788, after taking his M.D. at Oxford, he was appointed reader in chemistry there, but his sympathies with the French Revolution led to his resignation (1792). During 1798-1801 he carried on at Clifton a "pneumatic institute" for the cure of diseases by the inhalation of gases, with Sir Humphrey Davy for his assistant. His temperance tale, *Isaac Jenkins* (1793), was highly popular in its day. See *Life* by Dr. Stock (1811).

BEDFORD, GUMMING S. (1806-70). American physician; born in Baltimore, Md.; died in New York. He was grad-

uated at Mount St. Mary's, Emmittsburg, Md., 1825; took his medical degree at Rutgers Medical College, 1829; and spent some years in special study in Europe. In 1833 he was appointed professor in the medical college at Charleston, S. C.; subsequently was called to the Medical College, Albany, N. Y.; and in 1836 settled in New York. He made a specialty of obstetrics; was one of the projectors of the University Medical College; and introduced into the United States obstetrical clinics for the gratuitous treatment of poor women. His principal publications, *Diseases of Women and Children* and *Principles and Practice of Obstetrics*, have had a large circulation in the United States and Europe.

BELL, JOHN, of Antermony (1691-1780). Asiatic traveler; born in Campsie parish, Stirlingshire. Studied for the medical profession. In 1714 he went to St. Petersburg, and was physician to Russian embassies to Persia (1715-18), to China through Siberia (1719-22), and again to Persia (1722). In 1737 he settled at Constantinople as a merchant, but about 1746 returned to Scotland, where he died at Antermony, July 1. His *Travels* were published in 1763.

BELL, JOHN, Surgeon (1763-1820); was born at Edinburgh, May 12, and died at Rome, April 15. His *Principles of Surgery* (1801-7) was re-edited by his brother, Sir Charles Bell, in 1826.

BELL, SIR CHARLES (1774-1842). Famous for his discoveries in the nervous system, was born in Edinburgh, the youngest of five sons of William Bell, an Episcopal clergyman. In 1804 he proceeded to London, where he lectured with great success on anatomy and surgery. In 1807 he distinguished between the sensory and motor nerves in the brain. In 1812 he was appointed surgeon to the Middlesex Hospital, which his clinical lectures raised to the highest repute. To study gunshot wounds, he went to Haslar Hospital after Corunna in 1809, and after Waterloo took charge of an hospital at Brussels. In 1824 he became senior professor of Anatomy and Surgery to the Royal College of Surgeons, and in 1826 head of the new medical school (University College), but soon resigned. Knighted in 1831, and professor of surgery from 1836; he died suddenly. His works include *Anatomy of Expression in Painting* (1806); *Anatomy of the Brain* (1811); *Animal Mechanics* (1828); *Nervous System of the Human Body* (1830); and *The Hand (Bridgewater Treatise)*, 1833). See *Pichot's Vie et Travaux de Sir Charles Bell* (1859), and his *Correspondence* (1870).—To the same family belongs the Edinburgh surgeon,

Joseph Bell (born December 2, 1837), the original of "Sherlock Holmes."

BELL, THOMAS (1792-1880). Naturalist, was born at Poole, Dorsetshire, October 11, and in 1813 entered Guy's Hospital, where from 1817 till 1861 he held the post of dental surgeon, whilst also lecturing on comparative anatomy. In 1836 he became professor of zoology in King's College, London. Elected in 1828 a Fellow of the Royal Society, and from 1840 to 1853 its secretary, he was also president of the Linnæan Society (1853-61), and first president of the Ray Society (1844). He wrote *British Quadrupeds* (1837; 2 ed. 1874), *British Reptiles* (1839), etc. Retired from practise, about 1860 to the Wakes of Selborne, which he purchased from Gilbert White's grandnieces, and died there March 13.

BELLINI, LORENZO (1643-1704). An Italian anatomist and physician. He studied medicine under Redi, was professor of anatomy at Pisa, and in Florence was physician to the Grand Duke Cosmo, and also senior consulting physician to Pope Clement XI. Among his discoveries were the action of the nerves on the muscles and the uriniferous ducts, known as Bellini's tubes. He left also an original and curious book of poetry, the *Bucchercide* (1729).

BENNETT, JOHN HUGHES (1812-75). Physician, born in London, August 31, and died at Norwich, September 25, having been professor of the institutes of medicine in Edinburgh University, 1847-74. His investigations are largely embodied in his *Text-book of Physiology* (1870-71).

BERARD, JOSEPH FREDERIC (1789-1828). French physician; born and died in Montpellier. When only 20 years of age he wrote a thesis entitled *Theory of Natural Medicine, or Nature Considered as the True Physician, and the Physician as an Imitator of Nature*. He afterward went to Paris, where he was engaged to write in the *Dictionary of Medical Science*. In 1816 he returned to Montpellier as professor of therapeutics in a private course of lectures to the medical students of the college. At this period he published a work explanatory of the *Doctrines of the Medical School of Montpellier*. With Rouzet, he published Dumas' work on *Chronic Diseases*, with instructive commentaries. In 1823 he also published in Paris his work on *The Relations of the Physical and the Moral Organism, as a Key to Metaphysics and the Physiology of Mind*. In this he explains his own views of human nature and the principles of life, and his opposition to the views of Cabanis. He also took occasion to publish at the same time, a manuscript

letter of Cabanis, on *Primary or Final Causes*, accompanied by numerous annotations.

BERENDT, KARL HERMANN (1817-78). German ethnologist; born in Dantzig. After studying medicine he began to practise in Breslau, where he lectured in the university. In 1851 he went to Nicaragua and thence to Vera Cruz, where he devoted some years to ethnological study and research. He subsequently traveled in Yucatan and Guatemala, making a careful study of Mayan dialect. He published *Analytical Alphabet of the Mexican and Central American Languages* (1869); *Los escritos de Don Joaquin Garcia Icazbalceta* (1870); *Los trabajos linguisticos de Don Pio Perez* (1871); *Cartilla en lengua Maya* (1871).

BERGMAN, TORBERN OLOF (1735-84). A Swedish chemist; from 1758 a professor at Upsala.

BERLIN, RUDOLF (1833-97). A German oculist; born at Friedland (Mecklenburg-Strelitz). He studied at Göttingen, Berlin, and other universities; was connected as an instructor with the University of Tübingen and the Technical Institute of Stuttgart, and in 1889 was appointed professor of ophthalmology at the University of Rostock. The results of his investigations concerning the presence of foreign bodies in the vitreous humor, the anatomy and pathology of the lacrymal gland, and other subjects, appeared in technical journals. He was among the first to make a systematic comparative study of diseases of the eye, and in 1882 established a *Zeitschrift für vergleichende Augenheilkunde*.

BERNARD, CLAUDE (1813-78). Physiologist, born near Villefranche, July 12; studied medicine at Paris, and in 1841 became assistant at the Collège de France to Magendie, with whom he worked until his own appointment in 1854 to the chair of General Physiology, and whom he succeeded in 1855 as professor of Experimental Physiology. He was elected to the Academy in 1860, and died at Paris, February 10. His earliest researches were on the action of the secretions of the alimentary canal, the pancreatic juice, the connection between the liver and nervous system, etc., for which he received prizes from the Academy (1851-53). Later researches were on the changes of the temperature of the blood, the oxygen in arterial and in venous blood, the opium alkaloids, curarine, and the sympathetic nerves. His *Leçons de Physiologie Expérimentale* (1865) is a standard work. See Malloizel, *L'Œuvre de Claude Bernard* (1881).

BERNIER, FRANÇOIS (? -1688). A French physician and traveler, born at Angers. He took his degree of doctor at

Montpellier, departed for the East about 1654, and visited Syria, Egypt, Arabia, and India, in the last of which countries he resided for twelve years in the capacity of physician to the Great Mogul. On his return to France he published an account of his travels in India, *Les voyages de Bernier* (1699). This work is delightful in style and accurate in the delineation of manners and customs, as well as in the description of places.

BERTHOLLET, COUNT CLAUDE LOUIS (1748-1822). Chemist; was born at Talloire in Savoy, December 9. He studied at Turin, came to Paris in 1772, and in 1781 was elected a member of the Academy of Sciences. He aided Lavoisier in his researches on gunpowder and in forming the new chemical nomenclature, and accepted his antiphlogistic doctrines; in 1785 he showed the value of chlorine for bleaching. Following Priestley, he showed ammonia to be a compound of hydrogen and nitrogen. He was made a senator and a count by Napoleon, yet he voted for his deposition in 1814, and on the Bourbon restoration was created a peer. He died November 6th.

BERZELIUS, BARON JOHAN JAKOB (1779-1848). One of the greatest of chemists; was born on a farm in East Gothland, Sweden, August 29, studied at Upsala for a doctor; and died at Stockholm—his home from 1806—on August 7. His multiplied and accurate analyses established the laws of combination on an incontrovertible basis; and to him we owe our system of chemical symbols. He discovered the elements selenium, thorium, and cerium, and first exhibited in the metallic form calcium, barium, strontium, columbium or tantalum, silicium, and zirconium.

BICHAT, MARIE FRANÇOIS XAVIER (1771-1802). One of the greatest anatomists and physiologists; was born November 11, at Thoirette, Department of Jura, and studied in Paris under Pierre Joseph Desault (1744-95), who adopted him as his son, and whose surgical works he edited. In 1797 he began giving lectures, and in 1800 was appointed physician to the Hôtel-Dieu. Worn out by his unremitting labors, he died of fever, July 22. He was the first to simplify anatomy and physiology by reducing the complex structures of the organs to the simple or elementary tissues, marking an epoch in both sciences.

BIGELOW, JACOB (1787-1870). An American physician and botanist. He was born in Sudbury, Mass.; graduated at Harvard in 1806, and began the practise of medicine in Boston in 1810. He was for more than forty years physician to the Massachusetts General Hospital, and for a long

time professor of materia medica and clinical medicine in Harvard. In 1820 he was one of the committee of five who formed the American Pharmacopœia, and assisted in establishing the nomenclature which substituted a single for a double word when possible. He was also the originator of Mount Auburn Cemetery. His works include *Nature in Disease* (1854); *A Brief Exposition of Rational Medicine* (Philadelphia, 1858); *History of Mount Auburn* (1860), and many papers on medicine and botany, chief among the latter being his *Florula Bostoniensis* (1814). For many years he was president of the Massachusetts Medical Society.

BIRD, ROBERT MONTGOMERY (1805-54). A practising physician; born at Newcastle, Delaware, and died at Philadelphia. Besides two successful tragedies, he wrote *Calavar, a Mexican Romance* (1834); *Nick of the Woods* (1837), and other novels.

BIRKBECK, GEORGE (1776-1841). An English physician and philanthropist; born at Settle, in Yorkshire. He early evinced a strong predilection for scientific pursuits; and in 1799, after graduating as doctor of medicine, he was appointed to the chair of natural philosophy at the Andersonian Institution of Glasgow. In the following year he delivered, for the benefit of the working-classes, a gratuitous course of scientific lectures, which were continued during the two following years and proved eminently successful. He removed to London in 1804, and there he endeavored to prosecute his philanthropic schemes, at first without much encouragement, but ultimately with marked success. In 1827 he contributed to found the Mechanics' Institute, his coadjutors being Bentham, Wilkie, Cobbett, and others. He was appointed director of the institute, which he had originally endowed with the sum of £3,700, and held the office till his death in December.

BISCHOF, KARL GUSTAV (1792-1870). A German chemist and geologist; born near Nuremberg, January 18, and in 1882 became professor of chemistry in Bonn, where he died, November 30. His writings include technical treatises of botany, chemistry and geology, the most valuable being a *Manual of Chemical and Physical Geology*, which went through several editions. Between 1837 and 1840 he began a series of important experiments on inflammable gases in coal-mines, and on safety-lamps, and wrote an essay on the subject of avoiding explosions.

BISCHOFF, THEODOR LUDWIG WILHELM (1807-82). A German anatomist and physiologist; born in Hanover, October 28; died in Munich, December 5. He studied at Bonn

and Heidelberg, becoming in 1836 extraordinary professor and in 1843 ordinary professor of anatomy and physiology at the latter university. From 1844 to 1855 he filled the same chair at Giessen, where he founded a physiological institute and anatomical theater, and from 1855 to 1878 at Munich. Bishoff's studies were mainly in embryology and biology.

BLACK, JOSEPH (1728-99). Chemist; born, a Scotch-Irish wine-merchant's son, at Bordeaux, and educated at Belfast, Glasgow, and Edinburgh. In his famous M.D. thesis (1754) he showed that the causticity of lime and the alkalies is due to the absence of the fixed air or carbonic acid present in limestone and the carbonates of the alkalies. On Cullen's removal in 1756 to Edinburgh, Black succeeded him as professor of Anatomy and Chemistry in Glasgow, but soon after exchanged duties with the professor of the Institutes of Medicine, practising also as a physician. Between 1756 and 1761 he evolved that theory of latent heat on which his scientific fame chiefly rests. In 1766 he succeeded Cullen in the chair of Medicine and Chemistry in Edinburgh, and henceforward devoted himself to teaching. See Prof. Robinson's preface to Black's *Lectures* (2 vols. 1803).

BLACKMORE, SIR RICHARD (1650?-1729). Poetaster; born at Corsham, Wilts, and educated at Westminster and Oxford, taking his B. A. in 1674. First a schoolmaster, then a London physician (1687-1722), he was knighted in 1697, and died at Boxted, Essex. He wrote six epics in sixty books (all on the loftiest themes), besides versions of various books of the Bible, and theological, medical, and miscellaneous treatises.

BLANE, SIR GILBERT (1749-1834). Physician; born at Blane-field, Ayrshire, studied at Edinburgh University, and in 1779 sailed with Rodney to the West Indies. In 1783 he was elected physician to St. Thomas's Hospital, London. As head of the Navy Medical Board, he was instrumental in introducing the use of lemon-juice on board ship. In 1812 he was made a baronet.

BLOMSTRAND, CHRISTIAN WILHELM (1826-97). A Swedish chemist, born at Wexiö. He studied at the University of Lund, and from 1862 to 1895 was professor of chemistry and mineralogy there. In 1861 he undertook a scientific expedition to Spitzbergen, and in the same year was elected a member of the Stockholm Academy of Sciences. He discovered manganosite, vallerite, and other minerals, wrote several valuable text-books on organic chemistry, and also published *Die Chemie der Jetztzeit vom Standpunkte der*

elektrotechnischen Auffassung aus Berzelius's Lehre entwickelt (1869), and other treatises.

- BOCK, KARL ERNST** (1809-74). German anatomist. At the outbreak of the Polish revolution he went to Warsaw, where he acted as hospital physician, first in the Polish service and later in the Russian. On his return home he was elected extraordinary professor in the University of Leipsic. His title to fame rests chiefly on his *Handbook of Human Anatomy*.
- BOERHAAVE, HERMANN** (1668-1738). The most celebrated physician of the 18th century, was born at Voorhout, near Leyden; in 1682 he went to Leyden, where he studied theology and oriental languages, and took his degree in philosophy in 1689; but in 1690 he began the study of medicine, and in 1701 was appointed lecturer on the theory of medicine, in 1709 professor of medicine and botany. The two works on which his great fame chiefly rests, *Institutiones Medicæ* (1708) and *Aphorismi de Cognoscendis et Curandis Morbis* (1709), were translated into various European languages, and even into Arabic. Though so industrious in his own profession, he also undertook in 1718 the professorship of chemistry, and his *Elementa Chimiæ* (1724) occupies a high place in the history of chemistry. Meanwhile patients came from all parts of Europe to consult him, so that he made a fortune of two million florins (\$800,000). See Lives by Burton (2 vols. 1743) and Johnson (1834).
- BOIVIN, MARIE ANNE VICTOIRE** (1773-1841). French midwife, upon whom a diploma of M.D., was conferred by the University of Marburg, noted for her writings on obstetrics; born in Montreuil, April 9; died May 16. She was educated in the nunnery, where by her talents she attracted the attention of the sister of Louis XVI., Madame Elisabeth. When the nunnery where she was placed was destroyed in the course of the revolution, she spent three years in the study of anatomy and midwifery. In 1797 she married an employee at Versailles, of the name of Boivin, but on being left after a short time a widow with a child and without a fortune, undertook the office of midwife at the Hospital of the Maternity, and, in 1801, was appointed chief superintendent of the institution, to which, in accordance with her suggestion, a special school in accouchement was added by Chaptal. Her *Mémorial de l'art des accouchements*, published in 1824, passed through several editions. The empress of Russia invited her to St. Petersburg, but she declined.
- BOORDE, or Borde. Andrew** (1490?-1549). Born near Cuck-

field in Sussex; was brought up a Carthusian, after 1527 studied medicine at Orleans, Toulouse, Montpellier, and Wittenberg, visited Rome and Compostella, and for Cromwell carried through a confidential mission in France and Spain. He practised medicine in Glasgow (1536), traveled in Antwerp, Cologne, Venice, and Rhodes to Jerusalem, and in April died in Fleet prison in London. Boorde's chief works are his *Dyetary* and the *Fyrst Boke of the Introduction of Knowledge*, edited by Dr. Furnivall in 1870. His *Itinerary of Europe* has perished, but the *Handbook of Europe* survives, and the *Itinerary of England or Peregrination of Doctor Boorde* was printed by Hearne in 1735. Many books have been fathered on the fantastic old reprobate. The earliest known specimens of the Gypsy language occurs in the *Introduction*.

BOOTH, JAMES CURTIS (1810-88). An American chemist. He was born in Philadelphia, and graduated at the University of Pennsylvania in 1829. He then remained one year at the Rensselaer Polytechnic Institute, and in 1832 went abroad. There were at this time no regular organized student laboratories at German universities, and Booth combined his studies of chemistry at Wöhler's private laboratory at Cassel. After further studies at Berlin, Vienna, and in England, he returned to Philadelphia, where, in 1836, he established a laboratory for instruction in analytical chemistry, the first of its kind in the United States. Many distinguished chemists, such as Campbell Morfit, R. E. Rogers, J. F. Frazer, Thomas H. Garrett, and R. T. McCulloh, were educated at this institution. Mr. Booth was professor of applied chemistry at the Franklin Institute from 1836 to 1845, and was superintendent of smelting and refining, in the United States Mint at Philadelphia from 1849 to 1888, in which capacity he experimented with the nickel ores of Pennsylvania, introducing the fusion of that metal with other alloys in the coinage of cents during the year 1857. Among his principal works may be mentioned: *Annual Reports of the Delaware Geological Survey* (1839); *Encyclopadia of Chemistry* (in collaboration with Campbell Morfit, 1850); *On Recent Improvements in the Chemical Arts* (jointly with Campbell Morfit, 1852).

BORELLI, GIOVANNI ALFONSO (1609-79). An Italian physician and mathematician, the founder of the iatro-physical school. He was educated in Florence, and was a professor of mathematics in Pisa and afterward in Messina. Having taken part in a revolt, he was obliged to leave Messina, and spent the remainder of his life in Rome. He carefully ob-

served the motions of the satellites of Jupiter, then little known, and seems to have been the first to discover the parabolic paths of the comets. In his epoch-making work, *De Motu Animalium* (Rome, 1680-81), we find the first attempt to apply the principles of mechanics to the movements of animals. Regarding the bones as levers, in which the power acts between the weight and the fulcrum, he endeavors to calculate the power of muscles from a consideration of their fibrous structure, and the manner in which they are united to the tendons.

BOUSSINGAULT, JEAN BAPTISTE JOSEPH DIEUDONNE (1802-87). French chemist; born and died in Paris. He was sent to South America in the employment of a mining company, and made extensive travels and valuable scientific researches there. Returning to France he became professor of chemistry at Lyons in 1839, was made a member of the Institute, and then made Paris his chief residence. His works deal chiefly with agricultural chemistry, and include *Économie Rurale* (translated into English and German); *Mémoires de Chimie agricole et de Physiologie*; *Agronomie, Chimie agricole, et Physiologie*, etc.

BOWDITCH, HENRY INGERSOLL (1808-92). American physician; born at Salem, Mass. He received his degree at Harvard in 1832; was professor of clinical medicine at Harvard in 1859-67; chairman of the State Board of Health in 1869-79; and president of the American Medical Association in 1877. He announced the law of soil moisture as a cause of consumption in New England; introduced several new features in surgical treatment, and was author of many general and special works in medical science. He was the first to practise chest-puncture in cases of pleurisy.

BOWMAN, SIR WILLIAM (1816). Oculist. Was born in Nantwich, July 20, and died in London, March 29. With Todd he published *Physiological Anatomy* (5 vols. 1845-56), and gained a high reputation by his *Lectures on Operations on the Eye* (1849). His *Collected Papers* appeared in 1892.

BOYER, ALEXIS, BARON DE (1757-1833). A great French surgeon; was born a tailor's son at Uzerches in Limousin, and in 1805 was appointed first surgeon to Napoleon, whom he accompanied on his campaigns.

BOYLSTON, ZABDIEL (1680-1766). American physician; born in Brookline, Mass., died in Boston. He studied medicine, settled in Boston, and acquired a prosperous practise. In spite of the almost unanimous opposition of the medical profession and part of the public, he introduced the practise of inoculation for smallpox, having become a firm

believer in it. Out of 286 persons inoculated in 1721-72 only six died, and he had the satisfaction of seeing the practise become general in New England long before it became so in England. He visited England in 1725 and was elected a Fellow of the Royal Society. Besides some papers published in the Transactions of that Society he wrote: *Historical Account of the Smallpox Inoculated in New England, Upon All Sorts of Persons, Whites, Blacks, and of all Ages and Constitutions* (2d ed., 8vo., London, 1726; reprinted, Boston, 1730).

BRAID, JAMES (1795-1850). Born in Fife, studied medicine at Edinburgh, and settled as a surgeon in Manchester, where he died, March 25. He is noted for his researches on Animal Magnetism, which he called Hypnotism.

BRANDE, WILLIAM THOMAS (1788-1866). Chemist, born in London, February 11; died, February 11; having become an F.R.S. in 1809; professor of Chemistry to the Apothecaries' Company in 1812; Davy's successor at the Royal Institution in 1813, and head of the coinage department of the Mint, in 1854. He published a *Manual of Chemistry* (1819; 6th ed. 1848), a *Dictionary of Materia Medica* (1839), and a *Dictionary of Science and Art* (1842; new ed. 1875).

BRAUNE, CHRISTIAN WILHELM (1835-92). A German anatomist; born in Leipzig, and studied at the universities of Göttingen and Würzburg. In 1872 he became professor of typographical anatomy at the University of Leipzig. In his scientific investigations, Braune devoted himself particularly to the mechanical physiological side of anatomy, particularly as regards the movements of the joints and the equilibrium of the body in their bearing upon the equipment of the infantry. He also introduced dissection of frozen corpses into the technique of anatomy. Among his numerous works are the following: *Typographisch-anatomischer Atlas, nach Durchschnitten an gefrorenen Kadavern* (1872); *Die Lage des Uterus und Fötus am gefrorenen Kadavern* (1873); *Das Venensystem des menschlichen Körpers* (1884-88). In collaboration with His, he edited, after 1876, the *Archiv für Anatomie und Entwicklungsgeschichte*. He was also instrumental in securing the publication of the musical works of Frederick the Great.

BRIERRE DE BOISMONT, ALEXANDRE JAQUES FRANÇOIS (1798-1881). A French physician and authority on insanity; born in Rouen. He took his degree in medicine in 1825, in which year he published his first work, *Éléments de botanique*. In 1831 he spent some months in

Poland, studying the cholera, and upon his return published the results of his investigations in a treatise, which obtained for him a gold medal from the Institute. He then turned his attention to mental diseases, founding and maintaining an asylum for the treatment of the insane. His principal works are: *La pellagre et la folie pellagreuse* (1834); *La menstruation* (1842); *La delire aigu* (1844); *Les hallucinations* (1845); and *Le suicide* (1854).

BRIGHAM, AMARIAH (1798-1849). An American physician; born in New Marlboro, Mass., December 26. At an early age he was left upon his own resources, and finding his way to Albany from Schoharie, he secured employment in a bookstore, where he remained three years. He returned to his native place and studied medicine, and began its practise in 1821, becoming widely known as a surgeon at Greenfield. In 1828 he visited Britain and the continent of Europe. Returning to America, he located in Hartford. Here revivals being in frequent progress, he raised his voice against them, on account of their injurious hygienic tendencies, and published his views on the subject in *Influence of Mental Cultivation on the Health* (1832), and *Influence of Religion upon the Health and Physical Welfare of Mankind* (1835). In 1840, in spite of much opposition, he was appointed superintendent of the Hartford Retreat for the Insane, and two years later accepted the offer of the superintendency in the New York State Asylum for the Insane at Utica. In this position he was also successful. In 1844 he founded the *Journal of Insanity*, a quarterly publication. Among his other works are *Treatise on Epidemic Cholera* (1832); *Disease of the Brain* (1836); and *Asylum Souvenir* (1849). He died in Utica, New York, September 8.

BRIGHT, RICHARD (1789-1858). Physician; was born at Bristol; died December 16. He studied at Edinburgh, London, Berlin, and Vienna, and from 1820 was connected with Guy's Hospital. He made many important medical observations ("Bright's disease" of the kidneys is named after him) and wrote numerous dissertations. His *Travels through Lower Hungary* (1818) contains a valuable account of the Gypsies.

BRINTON, DANIEL GARRISON (1837-99). American surgeon, archæologist and ethnologist; born in Thornbury, Pa., died in Atlantic City, N. J. During the Civil War he was a surgeon in the Union Army, and from 1867 to 1887 was editor of the *Medical and Surgical Reporter*. In 1884 he was appointed professor of ethnology at the Academy of Natural Sciences in Philadelphia; and in 1886, professor of

American linguistics and archæology in the University of Pennsylvania. Among his many works are notes on the *Floridian Peninsula* (1859); *The Myths of the New World* (1868); *American Hero Myths* (1882); *Aboriginal American Anthology*; *Primer of Mayan Hieroglyphics* (1896); *Religions of Primitive Peoples* (1897); etc. He edited *The Library of Aboriginal American Literature* in eight volumes (1882-85), and was a high authority on all American archæological topics.

BROCA, PAUL (1824-80). A French surgeon and anthropologist, born at Sainte-Foy-la-Grande, Gironde; died July 9. After pursuing his medical studies with distinction, he was chosen professor of surgical pathology in the Faculty of Medicine in Paris, and surgeon successively of the four hospitals of Bicêtre, La Salpêtrière, Saint-Antoine and La Pitié. Celebrated as a surgeon, Broca was also regarded as one of the most learned masters of the existing school of anthropology. He founded the Paris Anthropological Society, of which he was secretary till his death, and he was a member of all the leading medical, biological and anatomical societies of Paris and the Continent. In 1861 he enunciated the theory that in aphasia the part of the brain necessarily diseased is the posterior third of the inferior left frontal convolution, which has since received the name of *Broca's convolution*. Elected a member of the Academy of Medicine in 1866, he was decorated with the Legion of Honor in 1868. Broca was a voluminous writer, and among his more important works may be mentioned the following: *Des Anévrismes et de Leur Traitement* (1856); *Sur l'Anesthésie Chirurgicale Hypnotique* (1859); *Études sur les Animaux Ressuscitants* (1860); *Instructions Générales pour les Recherches Anthropologiques* (1865); *Traité des Tumeurs* (1865); *Caractère Physique de l'Homme Préhistorique* (1869). He also collaborated in the production of several important medical and physiological works. In 1878 he presided over an international congress on anthropology held in Paris.

BRODIE, SIR BENJAMIN COLLINS (1783-1862). A distinguished English surgeon; born at Winterslow, near Salisbury. He studied at the Hunterian School, in Great Windmill Street, where Abernethy was then a lecturer, and at St. George's Hospital. In 1809 he became lecturer at the school and assistant surgeon at St. George's. In the following year he was chosen croonian lecturer at the Royal Society, and for some elaborate papers which he laid before the society was chosen fellow, and soon after received the Copley medal. In 1819 he became professor of anatomy and

surgery to the Royal College of Surgeons, and three years later full surgeon to St. George's Hospital. He continued his lectures till 1830. The appointment of sergeant-surgeon to the king was given him in 1834, and a similar appointment was continued him by commission of Queen Victoria. In 1844 he became president of the college and in 1858 president of the Royal Society, being the first surgeon who had that dignity conferred on him. His practise grew steadily, and his reputation with it, and amidst all his public and private duties he found leisure for wider studies than those merely professional, and for the production of several important works. These are—*Pathological and Surgical Observations on Diseases of the Joints*; *Lectures on Pathology and Surgery*; and *Psychological Inquiries*. Died at Betchworth, Surrey. Since his death his *Autobiography* has been published.

BROUSSAIS, FRANÇOIS JOSEPH VICTOR (1772-1838). A celebrated French physician, was born at St. Malo. From his father, who was also a physician, he received his first instructions in medicine, and he studied for some years at the college of Dinan. Of his works, which are very numerous, the most important are the *Examen* and *De l'Irritation et de la Folie*.

BROWN, JOHN (1736-88). Founder of the Brunonian system of medicine; born of poor parents, in Bunkle parish, Berwickshire; taught at Duns and in Edinburgh, and after studying medicine became assistant to Professor Cullen. Conceiving himself slighted by Cullen, he commenced giving lectures himself upon a new system of medicine, according to which all diseases are divided into the sthenic, or those depending on an excess of excitement, and the asthenic; the former to be removed by debilitating medicines, as opium, and the latter by stimulants, such as wine and brandy. His system found strong support in Germany and Italy. In 1779 he took his M.D. at St. Andrews, and in 1780 published *Elementa Medicinæ* (English version, with Life by Dr. Beddoes; 2d ed. 1795). Overwhelmed with debt, in 1786 he removed to London, where he died, October 17. His works were edited, with a memoir, by his son (3 vols. 1804).

BROWN, JOHN (1810-82). Essayist; born at Biggar, September 22; attended the High School at Edinburgh, and studied arts and medicine at the university there, becoming M.D. in 1833. His practise was never large, his life was quiet and uneventful (though some years were clouded by fits of depression). He died May 11. Almost all Dr. John Brown's writings are comprised within three volumes

—two *Horæ Subsecivæ* ("Leisure Hours," 1858-61) and *John Leech and other Papers* (1882). Humor is the chief feature of his genius—humor with its twin-sister pathos; we find them both at their highest perfection in his sketches of "Rab" and "Marjorie"—the uncouth mastiff and the dear dead child. Writing of nothing that he did not know, he wrote, too, of nothing that he did not love or greatly care for. Hence both the lucidity and the tenderness of his essays, which rank with Lamb's, and with Lamb's alone in the language. See *Dr. John Brown and his Sisters* (5th ed. 1896) and Dr. Peddie's *Recollections of him* (1893).

BROWN, THOMAS (1778-1820). A Scottish metaphysician, born at Kirkmabreck manse, Kirkcudbrightshire, July 9, entered Edinburgh University in 1792, and abandoning law for medicine, became in 1806 the partner of Dr. Gregory in his large practise. His strong bent, however, was for literature and philosophical speculation. At twenty he had published a criticism of Darwin's *Zoonomia*; he contributed at the outset to the *Edinburgh Review*; and in 1804 appeared his essay on *Cause and Effect*. In 1810 he became colleague and successor to Dugald Stewart, professor of Moral Philosophy; and he died April 2. Brown's chief contribution to psychology is the establishment of a sixth or *muscular sense*; his *Lectures* (with a memoir by Welsh) reached a 20th edition in 1860.

BROWNE, SIR THOMAS (1605-82). Author of the *Religio Medici*, was born in London, October 19, and educated at Winchester College and at Broadgate Hall (now Pembroke College), Oxford. He next studied medicine, traveled in Ireland, France, and Italy, continued his medical studies at Montpellier and Padua, graduated as Doctor of Medicine at Leyden and at Oxford, and settled in 1637 at Norwich. He lived calmly throughout the troubles of the Civil War, maintained an active correspondence with antiquaries and scientists, and was knighted by Charles II. on his visit to Norwich in 1671. He died October 19, and was buried in the church of St. Peter's Mancroft, whence in 1840 his skull was "knave'd out of its grave" and placed in the hospital-museum. His greatest work is his earliest, the *Religio Medici*, written about 1635—a kind of confession of faith, revealing a deep insight into the dim mysteries of the spiritual life. The surreptitious publication of two editions in 1642 obliged him to issue an authorised edition in 1643. It was translated into Latin, and had the honor of insertion in the *Index Expurgatorius*.

Pseudodoxia Epidemica, or Enquiries into Vulgar and Common Errors (1646), a strange and discursive amalgam of humor, acuteness, learning, and credulity, is by far the most elaborate of his works. *Hydriotaphia; Urn Burial* (1658), mainly a discussion of burial-customs, shows all the author's vast and curious learning set in language of rich and gorgeous eloquence. The *Garden of Cyrus* (1658), the most fantastic of Browne's writings, aims to show that the number five pervaded not only all the horticulture of antiquity, but that it recurs throughout all plant-life, as well as the "figurations" of animals. After his death appeared *Miscellany Tracts* (1683), *Letter to a Friend* (1690), and *Christian Morals* (1716), an incomplete work, evidently intended to be a continuation of *Religio Medici*. Browne's works are un-systematic and unequal; his thought is strikingly original, often expressed in quaint humor or searching pathos. His favorite theme is ever the mystery of death. His style is too peculiar, idiomatic, and difficult to be popular, and his studied brevity often falls into obscurity. Charles Lamb boasted that he was the first "among the moderns" to discover Browne's excellencies; De Quincey ranks him with Jeremy Taylor as the richest and most dazzling of rhetoricians; and Lowell calls him "our most imaginative mind since Shakespeare." There is a monumental edition of the works by Simon Wilkin (4 vols. Pickering, 1835-36); Dr. Greenhill's scholarly edition of the *Religio Medici* appeared in 1881.

BROWN-SEQUARD, EDOUARD (1817-94). Physiologist; born at Port Louis, Mauritius, April 8, the son of a Philadelphia sea-captain and a lady named Sequard. He studied at Paris, graduated M.D. in 1846, devoted himself to physiological research, and received many prizes for his experiments on blood, muscular irritability, animal heat, the spinal cord, and the nervous system. In 1864 he became professor of physiology at Harvard, in 1869 returned to Paris as professor of pathology in the School of Medicine, in 1873 became a medical practitioner in New York, and in 1878 succeeded Claude Bernard as professor of Experimental Medicine at the *Collège de France*. He repeatedly lectured in England also. He published lectures on *Physiology and Pathology of the Nervous System* (Phila., 1860); *Paralysis of the Lower Extremities* (1860); *Nervous Affections* (1873); *Dual Character of the Brain* (1877), etc. He died September 1. See Éloy, *La Méthode de Brown-Séguard* (Paris, 1893).

BRUCKE, ERNST WILHELM von (1819-92). A German

physician and physiologist, born in Berlin. He studied medicine at the universities of Berlin and Heidelberg, in 1846 became an instructor in anatomy at the Academy of Fine Arts, Berlin, and in 1848 professor of physiology at the University of Königsberg. In 1849 he was called to the chair of physiology and microscopic anatomy at the University of Vienna. Among his more important works are *an Anatomische Beschreibung des Augapfels* (1847); *Grundzüge der Physiologie und Systematik der Sprachlaute* (1856); and a *Neue Methode der phonetischen Transkription* (1863).

BRUNFELS, OTTO (1488-1534). A German physician and botanist, born in Mentz. He became a member of the Carthusian community near there, but subsequently turned Protestant, and was pastor in Steinheim and Neuenburg. Ultimately he abandoned his pastoral office, studied medicine, and died a physician in Bern. In his *Historia Plantarum* (1530-36), he was the first to describe the native plants of Germany. The text was accompanied by illustrations in outline.

BRUNS, VICTOR von (1812-83). A German surgeon, born at Helmstedt. He studied in Brunswick, Tübingen, Halle, and Berlin, and after practising in Brunswick visited Vienna and Paris, to perfect himself in the science of surgery. In 1843 he accepted the position of professor of surgery at Tübingen. In 1855 he was ennobled. He wrote numerous scientific treatises, and was an authority on diseases of the larynx, winning the medical prize of 20,000 marks offered by the Academy of Turin with his work on the surgical treatment of the larynx. Among his publications are: *Die Durchschneidung der Gesichtsnerven beim Gesichtsschmerz* (Tübingen, 1859); *Die Laryngoskopie und laryngoskopische Chirurgie* (Tübingen, 1865); *Die Amputation der Gliedmaßen durch Zirkelschnitt mit vorderm Hautlappen* (Tübingen, 1879).

BUCHAN, WILLIAM (1729-1805). Physician; born at Anstrum, Roxburghshire, studied divinity and medicine in Edinburgh, settled in Sheffield, but removed to Edinburgh about 1766, and in 1778 to London. Of his *Domestic Medicine* (1769) 80,000 copies were sold during Buchan's lifetime. He also wrote *Cold Bathing* (1786); *Diet* (1797); and *Offices and Duties of a Mother* (1800).

BUCHEZ, PHILIPPE BENJAMIN JOSEPH (1796-1865). French physician and publicist, edited various journals, published works on social science, history, and philosophy, striving ingeniously but vainly to weld Communism and

Catholicism, and, in concert with M. Roux Lavergne, began the *Histoire Parlementaire de la Révolution Française* (40 vols. 1833-38). In 1848 Buchez was president of the Nation Assembly.

BUDGE, JULIUS (1811-88). A German physiologist. He was born at Wetzlar, and studied at the universities of Marburg, Würzburg, and Berlin. He afterwards successively became extraordinary professor at Bonn (1847-56) and professor of anatomy and physiology at Greifswald, where he was also director of the anatomical institute. He pointed out the relation between parts of the brain on the one hand and the genito-urinary organs on the other, and made the important discovery that the systemic nerve has its origin in the spinal cord, and not in the peripheral ganglia. He also discovered the capillaries of the gall. Among his principal works are the following: *Die Lehre vom Erbrechen* (1840); *Allgemeine Pathologie* (1843); *Lehrbuch der speziellen Physiologie des Menschen* (8th ed., 1862); *Kompendium der Physiologie* (3d ed., 1875).

BUHL, LUDWIG von (1816-80). A German physiologist; born at Munich. He did much work in physical diagnosis, pathological anatomy, and microscopy. In 1850 he became professor of general pathology and pathological anatomy at the University of Munich, and in 1875 was appointed director in the pathological institute in that city. His most important publication is the treatise on pulmonary diseases entitled *Lungenentzündung, Tuberkulose und Schwindsucht* (1872; 2d ed., 1874).

BURNETT, SIR WILLIAM (1779-1861). Physician-general of the British navy; born at Montrose, and died at Chichester.

BURROWS, SIR GEORGE (1801-87). Physician; graduated at Cambridge as tenth wrangler in 1825, and in 1874 was created a baronet.

BUSCH, WILLIAM (1826-81). A German surgeon, born in Marburg. He studied at the University of Berlin; was in 1855 appointed professor of surgery at Bonn, and afterwards acted as consulting surgeon-general in the army in 1866 and during the Franco-Prussian War. His published works include the following: *Chirurgische Beobachtungen, gesammelt in der Klinik zu Berlin* (1854); *Lehrbuch der Chirurgie* (2 vols., 1857-69).

BUTLEROFF, ALEXANDER MIKHAILOVICH (1825-86). Russian chemist. Born at Tschistopol (Government of Kazan) and was educated at the University of Kazan,

where, in 1858, he was appointed professor of chemistry. He also held the position of rector at that institution. In 1868 he was called in the same capacity to the University of Saint Petersburg. Besides publishing a valuable work on the general principles of organic chemistry, Butleroff carried out a number of interesting original investigations. His best known contribution to science was the discovery of the so-called tertiary alcohols, and of a method by which the substances of this class may be readily prepared (*Butleroff's Reaction*). His scientific papers may be found in the publications of the Academy of Saint Petersburg and Paris, and in Liebig's *Annalen*. Butleroff was a strong believer in spiritualism, and even published a work in French on this subject, entitled *Etudes psychiques*.

BUTTS, SIR WILLIAM (?-1545). An English physician; born in Norfolk, and educated at Cambridge; being admitted to the degree of M.D. in 1518. He subsequently became physician in ordinary to Henry VIII. He appears as one of the characters in Shakespeare's *Henry VIII*. (v. 2).

BYFORD, WILLIAM HEATH (1817-90). Physician; born in Ohio, March 27; died in Chicago, May 21; graduated at Ohio Medical College in 1844. In 1857 he became professor of obstetrics in Rush Medical College, and in 1880 professor of gynecology there. In 1862 he was chosen president of the Woman's Medical College of Chicago. His volume on *Theory and Practise of Obstetrics* (1870) obtained a wide circulation among physicians.

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CABANIS, PIERRE JEAN GEORGES (1757-1808). Physician and philosophical writer; born at Cosnac, Charente-Inférieure; attached himself to the popular side in the Revolution. He furnished Mirabeau with material for his speeches on public education; and Mirabeau died in his arms. During the Reign of Terror he lived in retirement, and was afterwards a teacher in the medical school at Paris, a member of the Council of Five Hundred, then of the Senate. He died near Meulan. His chief work is his once-famous *Rapports du Physique et du Moral de l'Homme* (1802).

CABELL, JAMES LAWRENCE (1813-89). American sanitarian; born in Nelson County, Va.; died in Overton, Va. He was graduated at the University of Virginia in 1833, where he later filled the chair of anatomy. During the Civil War he had charge of military hospitals for the Confederate government. He devised measures to check the yellow fever epidemic at Memphis, and was president of the National Board of Health from 1879 till his death.

CAIUS, JOHN (1510-73). Physician and scholar; born at Norwich, October 6. Caius (pronounced *Keys*) being probably a Latinised form of Kaye or Key. He entered Gonville Hall, Cambridge, in 1529, and in 1533 was elected a fellow thereof, having just before been appointed principal of Fiswick's Hostel. In 1539 he went abroad, in 1541 was created an M.D. of Padua; returning to England in 1544, he lectured on anatomy in London, then practised at Shrewsbury and Norwich. In 1547 he was admitted a fellow of the College of Physicians, of which he was subsequently nine times elected president. He also became physician to Edward VI., Queen Mary, and Queen Elizabeth. Gonville Hall, founded in 1348 by Edmund Gonville, rector of Theltham, Suffolk (d. 1351), was by Caius in 1557 elevated into a college, which took the name of Gonville and Caius College, and of which in 1559 he became master. A loyal Catholic, he had great trouble with his Protestant fellows, who burned his mass vestments, and whom in return he put in the stocks. He died July 29. He was author of *A Boke or Counseill against the Sweatyng Sicknesse* (1552), and of ten other published works on a variety of subjects, critical, antiquarian, and scientific.

CALDANI, LEOPOLD MARCO ANTONIO (1725-1813). A distinguished Italian anatomist and physician, was born at Bologna. After holding various minor appointments, he was chosen assistant to the celebrated anatomist Morgagni at Padua, but disgusted with the envy which his distinguished position drew upon him, he removed to Venice. In 1772 he took possession of the chair of anatomy, vacant by the death of Morgagni, and endeavored, though without success, to found an anatomical museum.

CALVERT, FREDERICK GRACE (1819-73). Chemist; born in London, resided in France (1836-46), and then settled as a consulting chemist in Manchester. He was largely instrumental in introducing carbolic acid as a disinfectant.

CAMPER, PETER (1722-89). A celebrated anatomist and naturalist; born at Leyden, May 11. He was educated at the University of Leyden, and in 1746 graduated in philosophy and medicine. After the death of his father in 1748 he spent more than a year in England, studying under the most famous medical teachers in London. He then visited Paris, Lyons, and Geneva, and returned to Franeker, where he had been appointed to the professorship of philosophy, medicine, and surgery. He visited England a second time in 1752, and in 1755 he was called to the chair of anatomy and surgery at the Athenæum in Amsterdam. He resigned

this post after six years, and retired to his country house near Franeker, in order to carry on his studies uninterruptedly. In 1763, however, he accepted the professorship of medicine, surgery, and anatomy at Groningen, and continued in the chair for ten years. He then returned to Franeker, and after the death of his wife in 1776, spent some time in traveling. He made the acquaintance of Diderot and Marmontel at Paris, and was received with great respect by Frederick the Great at Potsdam. In 1762 he had been returned as one of the deputies in the assembly of the province of Friesland, and the latter years of his life were much occupied with political affairs. In 1783 he was nominated to a seat in the council of state, and took up his residence at the Hague. His death (April 7) was caused by a violent pleurisy, the effects of which were accelerated by political excitement.

CAMPION, THOMAS (about 1575-1620). Physician, poet, and composer, was born at Witham in Essex, studied in Cambridge and abroad, and died in London. See Bullen's edition of his works (1889) and E. Rhys's selection (1896).

CANTANI, ARNOLDO (1837-93). Italian physician; born in Hainsbach, Bohemia, February 15; died, Naples, May 7. He was educated at Prague, and was physician in the general hospital there. In 1864 he became professor of pharmacology and toxicology at Pavia; in 1867 he was director of the clinical institute at Milan, and in 1868 of that at Naples. In 1889 he became a senator of Italy. He investigated chiefly malaria, typhus, and tuberculosis; and was influential in introducing the methods of German medicine into Italy. He wrote *Manuale di Materia Medica e Terapeutica* (1865); *Manuale di Farmacologia Clinica* (1885-90).

CARLETON, WALTER (1619-1707). Physician, philosopher, antiquary, and author, was born at Shepton-Mallet, and died at Nantwich.

CARLYLE, JOHN AITKEN (1801-79). An English physician, brother of Thomas Carlyle. He studied medicine at Edinburgh University; was traveling physician to the Countess of Clare, and afterwards to the Duke of Buccleuch. After abandoning his practise (1848), he lived for a time at Chelsea near his brother. He made an excellent prose translation of Dante's *Inferno* (1849; rev. 1867).

CARNOCHAN, JOHN MURRAY (1817-87). An eminent surgeon; born in Savannah, Georgia, July 4; died in New York City, October 28. He studied medicine at the University of Edinburgh and graduated there, and afterward studied surgery in Paris, London and other Continental cities. In

1847 he began the practise of surgery in New York City, where he at once attained a very high reputation on account of his success in operations never before attempted. In 1852 he severed and tied the femoral artery, effecting a cure in an exaggerated case of nutrition (*elephantiasis arabum*). The same year he removed a lower jaw, entire, with both condyles. In 1854 he removed the entire ulna, and also the entire radius. In 1856 he cut down and removed the entire trunk of the second branch of the fifth pair of cranial nerves, the nerve being cut from the infra-orbital foramen to the foramen rotundum, at the base of the skull, involving an operation through the malar bone. The removal of this nerve had been decided upon to secure relief in a chronic case of neuralgia. It was entirely successful, and made the bold and accurate operator famous throughout the world. In 1851 he was appointed professor of surgery in the New York Medical College. He occupied other professional appointments, including that of surgeon-in-chief to the State Immigrant Hospital. He published *Congenital Dislocations* (1850); *Contributions to Operative Surgery and Surgical Pathology* (1860, 1877-86).

CARSON, JOSEPH (1808-76). An American pharmacist and medical botanist; born in Philadelphia. He graduated at the University of Pennsylvania in 1826, and at the Medical School of the University in 1830, and in 1836-50 was professor of materia medica in the Philadelphia College of Pharmacy. He held a similar chair in the University of Pennsylvania from 1850-76. In 1870 he was president of the national convention for the revision of the Pharmacopoeia, and for a number of years he was associate editor of the *American Journal of Pharmacy*. He edited the *Elements of Materia Medica of Jonathan Pereira* (1843; 2d ed., 2 vols., 1845), and the *Materia Medica and Therapeutics of J. Forbes Royle* (1847), and published the *Illustrations of Medical Botany* (1847).

CASPER, JOHANN LUDWIG (1796-1864). A German physician. He was born in Berlin, and studied at the university of that city and in Halle and Göttingen. In 1820 he became lecturer in the University of Berlin, and in 1839 full professor. From 1841 he was in charge of the medico-legal institute connected with the university. He exerted great influence, and his advice was constantly sought by the Government. His *Beiträge zur medizinischen Statistik und Staatsarzneikunde* (1825-37) marks the first serious attempt at the establishment of a science of medical statistics. This work was followed by the *Denkwürdigkeiten zur medizinischen*

Statistik und Staatsarzneikunde, by which Casper established himself as a high authority on this subject. A later work, entitled *Praktisches Handbuch der gerichtlichen Medizin*, has passed through eight editions.

CASTALDI, PAMFILO. (15th Century). An Italian printer and physician of the middle of the 15th century, supposed by some Italians to have been the inventor of printing.

CAVENDISH, HENRY (1731-1810). Natural philosopher, eldest son of Lord Charles Cavendish, and a grandson of the second Duke of Devonshire, was born at Nice, October 10. From a school at Hackney he passed in 1749 to Peterhouse, Cambridge, but quitted it three years later without a degree; thereafter he devoted the whole of his long life to scientific investigations, having had a large fortune bequeathed him by an uncle. A silent, solitary man, he had his magnificent library in London, four miles from his residence on Clapham Common, so that he might not encounter persons coming to consult it. His female domestics had orders to keep out of his sight, on pain of dismissal. His dinner he ordered daily by a note placed on the hall-table. He died, unmarried, at Clapham, March 10, leaving more than a million pounds sterling to his relatives. Cavendish may almost be called the founder of pneumatic chemistry. In 1760 he discovered the extreme levity of inflammable air, now known as hydrogen gas—a discovery which led to balloon experiments; and later, he ascertained that water resulted from the union of two gases—a discovery which has erroneously been claimed for Watt. The famous *Cavendish Experiment* was an ingenious device for estimating the density of the earth. Cavendish also wrote on astronomical instruments; and his *Electrical Researches* (1771-81) were edited by Professor Clerk Maxwell (1879). See his *Life* by G. Wilson, forming vol. I of the Cavendish Society's *Works* (1846).

CELSUS, AULUS CORNELIUS (Flourished 50 A. D.). A Latin physician, wrote on medicine, rhetoric, history, philosophy, war, and agriculture. His only extant work is the *De Medicinâ* (ed. by Daremberg, Leip. 1859; English trans. 1756).

CHAISSAIGNAC, CHARLES MARIE EDOUARD (1805-79). A French physician. He was born at Nantes, and in 1835 became prosector and professor at the university and physician at the Central Bureau of the Hospitals of Paris. He is the originator of the surgical operation known as *écrasement*, by means of which tumors, piles, polypi, and other growths may be removed without the effusion of blood.

The general introduction of drainage in surgery is also due to his initiative. His principal works include: *Traité de l'écrasement linéaire* (1856); *Leçons sur la trachéométrie* (1855); *Clinique chirurgicale* (1854-58); *Traité pratique de la suppuration et du chirurgical* (2 vols., 1859); *Des l'empoisonnement du sang par matières organiques* (1873).

CHAMBERLEN, HUGH (about 1630-1720). Born at London. An English physician (physician in ordinary to the king, 1673), celebrated as the projector of a financial scheme designed "to make England rich and happy," based on the issue of a large quantity of bank-notes on the security of landed property.

CHANCA, DR., (Believed to have been Diego Alvarez Chanca (about 1493). A Spanish physician, native of Seville, who accompanied Columbus on his second voyage in 1493. He wrote a letter to the cathedral chapter of Seville, giving an account of what he saw, and this is one of the main historical authorities for the voyage. Nothing is known of his previous or subsequent life.

CHAPTAL, JEAN ANTOINE, COUNT DE CHANTELOUP (1756-1832). A French chemist and statesman. He studied medicine and chemistry, and became professor of chemistry at Montpellier. Subsequently, he established chemical works near there, and acquired celebrity for producing chemicals which had hitherto been imported. It is said that the Spanish Government offered him a large pension to go to Spain, and his biographer relates that Washington wrote repeatedly to Chaptal inviting him to come to America. During the Revolution, the Committee of Public Safety put him in charge of the saltpetre works at Grenelle. After the 18th Brumaire (November 9, 1799) he was made a councillor of State by Napoleon and succeeded Lucien Bonaparte as Minister of the Interior, in which capacity he established chambers of commerce, a school of arts, and in many ways contributed to the material development of the country. In 1804 he lost Napoleon's favor, but he was recalled the following year and made a member of the Senate. On Napoleon's return from Elba, Chaptal was made Director-General of Commerce and Manufactures, and Minister of State. The downfall of the Empire sent him to private life. He wrote a treatise on applied chemistry which was translated into the principal European languages. Consult, Flourens, *Eloges historiques* (Paris, 1856-62).

CHARCOT, JEAN MARTIN (1825-93). French physician; born in Paris, November 25, died in the Morvan, Central France, August 18. He obtained his diploma as M.D. in

1853; was called to a place on the staff of the Salpêtrière in 1862, from which time he continually devoted his attention to the study of the nervous system, and came into international prominence through his experiments in hypnotism and mental suggestion. Besides his principal works on various forms of disease, his *Leçons Cliniques sur les Maladies du Système Nerveux*, and his *Leçons du Mardi à la Salpêtrière*, he founded, in 1880, and edited the *Archives de Neurologie*, and took a leading part in the direction of the *Revue de Médecine*, *Archives de Pathologie Expérimentale*, and the *Nouvelle Iconographie de la Salpêtrière*. He was a member of the Institute of France, of the Royal Irish Academy, of the Royal Medical and Chirurgical Society of London, and of a great number of other scientific societies in various countries.

CHAULIAC, or **Cauliac**, or **Chaulieu**, **Gui de** (About 1302-80).

A French surgeon-physician at Lyons and later at Avignon. He wrote a noted treatise on surgery, long an authority. *Inventorium, sive collectorium partis chirurgicæ medicinæ* (published 1489 or 1490). He has left a description of the great plague of 1348.

CHELIUS, **MAXIMILIAN JOSEPH** von (1794-1876). A

German physician. He was born at Mannheim and was educated at the University of Heidelberg. He was professor of surgery in Heidelberg from 1817 to 1864, where he contributed greatly to the advancement of the science. His more important works include: *Handbuch der Chirurgie* (8th ed., 1858); *Ueber die Heilung der Blasen-Scheiden-fisteln durch Kauterisation* (1845); *Zur Lehre von den Staphylophen des Auges* (1858).

CHENEVIX, **RICHARD** (1774-1830). Chemist and mineralogist, was born in Dublin of Huguenot ancestry, and lived much in France.

CHENU, **JEAN CHARLES** (1808-79). A French naturalist and army physician. He was born in Metz, and was educated in Paris. In 1829 he entered the sanitary corps of the army, and subsequently he was a physician in the Crimean War. During the Franco-Prussian War he was at the head of the ambulance corps of the Paris press. In addition to publishing several valuable works on the medico-surgical statistics of modern French campaigns, he edited the colossal publication entitled, *Encyclopédie d'histoire naturelle* (31 vols., 1850-61).

CHESELDEN, **WILLIAM** (1688-1752). English surgeon and anatomist. Born near Melton. Mowbray, Leicestershire;

died in Bath, April 10. At the age of 22 he began to give lectures on anatomy, and in 1711 he was chosen F.R.S. In 1713 he published a treatise on the *Anatomy of the Human Body*, long a favorite manual of the science. He continued to read his lectures for more than 20 years, during which he gradually rose to the head of his profession. In 1723 he published a *Treatise on the High Operation for the Stone*. In 1733 was published his *Osteography, or Anatomy of the Bones*. Cheselden obtained in 1737 the appointment of chief surgeon to Chelsea Hospital, a position he held until his death.

CHEVREUL, MICHEL EUGENE (1786-1889). Chemist; born at Angers, August 31; studied chemistry at the Collège de France in Paris. He lectured at the Collège Charlemagne, and held a technical post at the Gobelins. In 1826 he entered the Academy of Sciences, and in 1830 became director of the Museum of Natural History. Early discoveries were those of margarine, oleine, and stearine; and these studies and his theory of saponification opened up vast industries. Between 1828 and 1864 he studied colors. This patriarch of the scientific world, "le doyen des étudiants de France," died April 9, his hundredth birthday having been celebrated three years before with great enthusiasm.

CHEYNE, GEORGE (1671-1743). Physician; born at Methlick, Aberdeenshire, and, after studying at Edinburgh under Pitcairn, started a London practise in 1702. Full living made him enormously fat (468 lbs.), as well as asthmatic, but from a milk and vegetable diet he derived so much benefit that he recommended it in all the later of his twelve medical treatises. He died at Bath, April 13.

CHOULANT, JOHANN LUDWIG (1791-1861). A German physician; born in Dresden. He studied in Dresden and Leipzig, and became connected with the clinics in Dresden, in which he was appointed professor of therapeutics in 1823 and director in 1828. Subsequently he acted for a number of years as head of the Academy. His published works include the following: *Lehrbuch der speciellen Pathologie und Therapie des Menschen* (1831 and several later editions); *Handbuch der Bücherkunde für ältere Medizin* (2d ed., 1841); *Bibliotheca Medico-historica* (1842); and *Die Anfänge wissenschaftlicher Naturgeschichte* (1856).

CHRISTISON, SIR ROBERT (1797-1882). Toxicologist; born at Edinburgh, the son of the professor of Humanity, July 18. After graduating in 1819, he proceeded to London and Paris, and in the French capital studied toxicology under Orfila. He was in 1822 appointed professor of Medical

Jurisprudence at Edinburgh, and from 1823 to 1877 held the chair of *materia medica*. He became physician to the Queen (1848), president of the Edinburgh Royal Society (1868-73), and a baronet (1871). During a vigorous old age he could walk, run, or climb better than any of his coevals. He died January 23. Besides contributing to medical journals, Christison wrote the standard *Treatise on Poisons* (1829), etc. See *Life*, edited by his sons (1885-86).

CLARK, ALONZO (1807-87). An American physician; born at Chester, Massachusetts, March 1. Was graduated in arts at Williams College (1823), and took his medical degree at the College of Physicians and Surgeons in New York (1835), where he became professor of physiology and pathology (1848), which he held until 1855, in which year the chair was reconstituted to embrace pathology and practical medicine, Clark holding his chair until 1885. He was dean of the faculty of the college from 1875 to 1885, and was president of the New York State Medical Society. Died in New York City, September 13.

CLARK, SIR ANDREW (1826-93). Physician; born at Wolfhill, near Coupar-Angus, October 28, and educated at Aberdeen and Edinburgh. In 1854 he settled in London, where he acquired a high reputation for his skill in the treatment of diseases affecting the respiratory, renal, and digestive organs. Among his patients were "George Eliot" and Mr. Gladstone. Created a baronet in 1883, he died November 7. He published several medical works. See *Life* by Canon MacColl and Dr. Allchin (1896).

CLARK, SIR JAMES (1788-1870). Physician; born at Cullen, Banffshire, December 14, took his M.A. at Aberdeen, studied medicine at Edinburgh and London, was a naval surgeon 1809-15, practised eight years at Rome, and in 1826 settled in London. In 1837 Clark, who had been physician to the Duchess of Kent, was appointed physician in ordinary to Queen Victoria, and in 1838 was created a baronet. He wrote on climate, consumption, etc. He died June 29.

CLARKE, JACOB AUGUSTUS LOCKHART (1817-80). An English physician; born in London. He was brought up in France, but studied medicine in England, at Guy's and Saint Thomas's hospitals. He there divided his attention between private medical practise and original research in microscopic anatomy and pathology, giving most of his time to research. A group of ganglion-cells in the spinal column are named after him, "the posterior vesicular column of Clarke." The results of his investigations were published in the form of special papers; he wrote no books. A list of his papers may

be found in the *Catalogue of the Library of the Medico-Chirurgical Society* (1879).

CLARKE, JOHN (1609-76). Born in Bedfordshire, England, October 8; died at Newport, R. I., April 20. An English physician, one of the founders of Rhode Island. He was driven from Massachusetts in 1638, and was one of the purchasers of Aquidneck (Rhode Island) from the Indians. In 1639 he was one of the founders of Newport, where he became pastor of the Baptist church founded in 1644. He occupied various positions of trust in the colony.

CLARKE, THOMAS (1801-67). Chemist; born at Ayr; became a manufacturing chemist in Glasgow, lectured on chemistry there, and in 1833 obtained the chair of Chemistry at Marischal College, Aberdeen. He discovered the soap-test for hardness in waters.

CLOT, ANTOINE BARTHELEMY, or Clot Bey (1793-1868) A French physician; born at Grenoble. He studied at Montpellier, and for several years practised medicine and surgery at Marseilles. After 1822 he lived mostly in Egypt, where by order of Mehemet Ali he established hospitals and medical and pharmaceutical colleges and organized the medical service of the Army and Navy. In 1832 he was given the rank of an Egyptian bey, and in 1836 that of a general. After the death of Mehemet Ali, Clot left Egypt and resumed the practise of medicine at Marseilles. In 1854 he returned to Egypt, and became physician-in-ordinary to the Viceroy, Said Pasha. Clot's great activity as an organizer did not prevent him from carrying out important scientific observations and gathering large scientific collections. His published works include: *Relation des épidémies de choléra-morbus qui ont régné à l'Héggiaz, à Suez et en Egypte* (1832); *De la peste observée en Egypte* (1840); *Coup d'œil sur la peste et les quarantaines* (1851); *Méhémet-Ali, Vice-roi d'Egypte* (1862); *De l'ophthalmie, du trichiasis, de l'entropion et de la cataracte observés en Egypte* (1864); and *Un dernier mot sur la non-contagion de la peste* (1866).

CLOWES, WILLIAM (about 1540-1604). Surgeon; served with Leicester in the Low Countries and on board the fleet that defeated the Armada. He became surgeon to the queen, and after a prosperous practise in London, retired to Plaistow in Essex. He wrote five books in clear and vigorous English. His son, William (1582-1648), was also a well-known surgeon.

COBBOLD, THOMAS SPENCER (1828-86). An English authority on parasitic worms; born at Ipswich, England; died March 20. He studied medicine at Edinburgh and lectured

in London on botany, zoölogy, comparative anatomy, geology and helminthology, in connection with various hospitals and colleges. He wrote *Entozoa* (1864); *Tapeworms* (1866); and *Parasites* (1879); besides numerous other works on kindred subjects.

COGSWELL, MASON FITCH (1761-1830). American physician; born in Canterbury, Conn., September 28; died at Hartford, Conn., December 10. He was adopted by Samuel Huntington, president of the Continental Congress and governor of Connecticut, and graduated valedictorian at Yale 1780. He studied medicine with his brother James, at the soldiers' hospital in New York during the Revolution, and eventually became one of the best-known surgeons in the country. He was the first in the United States to remove a cataract from the eye, and to tie the carotid artery (1803). Mainly through his influence the first asylum for deaf-mutes was founded in this country at Hartford, and his daughter Alice was its first pupil. He was also a founder of the Retreat for the Insane in the same city.

COITER, VOLCHER (1534-90). A Dutch anatomist; born at Gröningen. He studied in France and in Italy, where he heard the lectures of Fallopius at Pisa, was city physician of Nuremberg, and later was attached as surgeon to the army of Johann Kasimir, Count Palatine of the Rhine. He is considered one of the founders of the science of pathological anatomy. Numerous anatomical discoveries are credited to him, including that of the superior muscles of the nose. His studies in osteology and myology are partially set forth in the volumes *Tabulæ Externarum et Internarum Humani Corporis Partium* (1573); and *Lectiones Gabrielis Fallopii* (1575) which are also interesting as revealing one of the earliest attempts at the examination of the internal structure of birds. Indeed, his table, *De Differentiis Avium*, included in the latter, is among the first ornithological classifications.

COLDEN, CADWALLADER (1688-1776). A Scotch physician who emigrated to America in 1708 and became well known in his profession. He practised for ten years in Philadelphia, and then, in 1718, settled in New York City. He was the first surveyor-general of the Colony of New York, was a member of the provincial council, and in 1761 was appointed Lieutenant-Governor, which office he held until his death. As the Governors were often changed, Colden was frequently called upon to act as chief executive, and in this capacity came into conflict, upon many occasions with the radical element of the "patriot" party. He devoted

much attention to the study of the sciences, and especially of botany, and was the first to introduce the Linnæan system of classification into America. He published a *History of the Five Indian Nations of Canada* (1727), a work of great value, and a less important work on *The Principles of Action in Matter* (1752).

COMBE, ANDREW (1797-1847). Born in Edinburgh, October 27, and in 1823 commenced practise there. In 1836 he received the appointment of physician to the king of the Belgians, but his health failing, he returned to Scotland, where in 1838 he became a physician to Queen Victoria. He died at Gorgie, near Edinburgh, August 9. His *Principles of Physiology* (1834) reached a 15th edition in 1860. See *Life* by George Combe (1850).

CONOLLY, JOHN (1794-1866). Physician; born at Market Rasen, Lincolnshire, graduated at Edinburgh in 1821, and in 1827 settled in London, where he was two years professor in University College. From 1839 to 1844 he was resident physician at Hanwell Asylum; afterwards he was visiting physician. Under him mechanical restraint was discontinued; and although his views were admittedly not original, to him the revolution of our asylum management is mainly due. See *Memoir* by Sir James Clark (1869).

CONRING, HERMANN (1606-81). Dutch scholar; born in Norden, East Friesland, November 9; died at Helmstedt, Brunswick, December 12. He studied at Helmstedt and Leyden, devoting himself chiefly to theology and medicine; was appointed, in 1632, professor of philosophy at Helmstedt, in 1636 professor of medicine, and remained in that city until his death. He was distinguished in almost every department of knowledge, and the title of a counselor was conferred on him by the kings of Denmark and Sweden and by the elector of the Palatinate. He was then made professor of law. The German emperor likewise distinguished him. From far and near his advice was sought in political and legal cases. He did a great deal for the history of the German empire, and for the improvement of German public law, in which he opened a new path. He wrote: *De origine juris Germanici* (1643); *Excercitationes de re publica Germanica* (1675); and very many other treatises to the number of over 100. His works, with his biography, were published in 1730.

COOKE, JOSIAH PARSONS (1827-94). An American chemist; born in Boston, Massachusetts, October 12; educated at Boston and Harvard; tutor in mathematics at Harvard in 1849, and later instructor in chemistry, Erving professor of

chemistry and mineralogy and director of the chemical laboratory. His *alma mater* and the University of Cambridge, England, have conferred several honorary degrees upon Dr. Cooke for his valuable works. These include *Chemical Problems and Reactions* (1853); *Elements of Chemical Physics* (1860); *Principles of Chemical Philosophy* (1866); *The New Chemistry* (1871); *Religion and Chemistry* (1864); *The Credentials of Science the Warrant of Faith* (1888).

COOPER, SIR ASTLEY PASTON (1768-1841). Surgeon; son of a clergyman; born at Brooke Hall, Norfolk, August 23. From sixteen a medical student in London and Edinburgh, he lectured on anatomy at St. Thomas's Hospital (1789) and at the College of Surgeons (1793), in 1800 became surgeon to Guy's, and in 1813 professor of comparative anatomy in the College of Surgeons. An essay on the loss of the *membrana tympani* gained him, in 1802, the Copley medal of the Royal Society, of which he was elected a fellow in 1805. In 1804-7 appeared his great work on *Hernia*, which was followed by *Dislocations and Fractures* (1822), *Anatomy and Diseases of the Breast* (1829-40), *Anatomy of the Thymus Gland* (1832), etc. His annual income, which in the fifth year of his practise was only \$500, had in 1813 risen to \$105,000. In 1817 he tried the bold (but unsuccessful) experiment of tying the aorta; in 1820 removed a tumor from the head of George IV., and was made a baronet. In 1827 he became president of the College of Surgeons, in 1828 sergeant-surgeon to the king, and in 1830 vice-president of the Royal Society. He died February 12, and was buried in the chapel of Guy's Hospital. Surgery, hitherto "frightful alternatives or hazardous compromise," was by him raised into a science. See *Life* (1843).

COPLAND, JAMES (1791-1870). Physician, was born at Deerness, Orkney, studied at Edinburgh, and settled in London in 1820. He wrote a *Dictionary of Practical Medicine* (3 vols., 1832), etc.

COTTON, NATHANIEL (1705-88). An English physician and poet; the friend of Young, author of *Night Thoughts*; and of the poet Cowper, whom he cared for in 1763-65 in his sanatorium, or, as he rather grandiloquently styled it, "Collegium Insanorum," at Saint Albans, Hertfordshire, where he treated mental diseases with success. His *Visions in Verse* (1751) is his best known volume, and among his shorter poems, *The Fireside*, and *To a Child Five Years Old*, are still found in anthologies.

COUES, ELLIOTT (1842-99). American naturalist; born in

Portsmouth, N. H., September 9; died in Baltimore, December 26. In 1861 he graduated from Columbian University, Washington, D. C., and the year following entered the United States army as a medical cadet. His thorough work as assistant-surgeon in the army, 1863-81, attracted attention, and for that and other services he was brevetted captain. For some years he continued to practice surgery or teach its science; but he also continued to pursue the study of zoology, begun while in the university. In 1873 he was appointed surgeon and naturalist for the United States commission which defined the northern boundary. For three years he remained connected with the commission, and in addition gave some assistance to the Smithsonian Institution. In 1877 he was called by the Columbian University to take charge of a department of anatomy, and later was appointed by the Virginia Agricultural and Mechanical College as professor of biology. He was associate editor of *The American Naturalist* and other periodicals; and edited, for the *Century Dictionary*, the departments of comparative anatomy, biology, and zoology. He was one of the founders of the American Ornithologists' Union, and an active member of many scientific societies in Europe and America. He was president of the board of control of the American branch of the Theosophical Society of India. His last years were given chiefly to the Smithsonian Institution. He has left a large number of valuable works on mammalogy and ornithology, some of which are: *Key to North American Birds* (1872); *Field Ornithology* (1874); *New Key to North American Birds*; *Birds of the Northwest* (1874); *Fur Bearing Animals* (1877); *Birds of the Colorado Valley* (1878); *New England Bird Life* (1881); *Check List of North American Birds* (1884); *Biogen* (1884); *The Daemon of Darwin* (1884); *Our Native Birds*.

COWPER, WILLIAM (1666-1709). An English surgeon; born at Petersfield in Sussex. He was made a barber-surgeon in 1691, and became known not only as a skillful practitioner, but also as a thorough anatomist and pathologist. Among his permanent contributions to anatomical science, the discovery of the now so-called Cowper's glands (q. v.), will preserve his name. In 1696 he was made a Fellow of the Royal Society. His published works include the following: *Myotomia Reformata* (1694; 2d ed., revised by Jurin, Pemberton and Tanner, 1724); *The Anatomy of Human Bodies* (1698; 2d ed., 1737); *Glandularum Quarundam nuper Detectarum Ductumque earum Excretionum Descriptio cum Figuris* (1702).

- CRAIK, JAMES** (1731-1814). Born in Scotland; died in Fairfax County, Va., February 6. A Scottish-American physician. He accompanied Washington in the expedition against the French and Indians in 1754; served as physician under General Braddock in 1755; entered the medical service of the Continental army 1775; and became the family physician of Washington, whom he attended in his last illness. On his authority rests the anecdote of the Indian chief who, at Braddock's defeat, discharged his rifle fifteen times at Washington without effect, and who years after made a long journey to see the man whom he supposed to enjoy a charmed existence.
- CREDE, KARL SIEGMUND FRANZ** (1819-92). A German gynecologist; born in Berlin. He studied medicine in Berlin and in Heidelberg, and in 1852 was made director of the School of Midwifery and of the obstetric department of the Charité in Berlin. Four years later he was made professor of obstetrics and director of the lying-in hospital in Leipzig. His published works include the following: *Klinische Vorträge über Geburtshilfe* (1853-54); *Die Verhütung der Augenentzündung der Neugeborenen* (1884); *Gesunde und kranke Wöchnerinnen* (1886); *Lehrbuch der Hebammen* (6th ed., revised by Leopold and Zweifel, Leipzig, 1897). From 1853 to 1869 he was co-editor of the *Monatsschrift für Geburtskunde*, and, for many years of the *Archiv für Gynäkologie*.
- CRITCHETT, GEORGE** (1817-82). Ophthalmic surgeon; born at London; from 1846 was assistant-surgeon and (1861-63) surgeon to the London Hospital, and in 1876 became ophthalmic surgeon and lecturer at the Middlesex Hospital, where his operations acquired a European fame. He died November 1, leaving a successor in his son, George Anderson Critchett, (born December 18, 1845).
- CRUIKSHANK, WILLIAM CUMBERLAND** (1745-1800). Born at Edinburgh; died at London, June 27. A Scottish anatomist. He wrote *Anatomy of the Absorbent Vessels* (1786), etc.
- CRUVEILHIER, JEAN** (1791-1874). A French anatomist; was born at Limoges. In 1825 he became professor of anatomy in the university of Paris, and ten years later he was the first occupant of the recently founded chair of pathological anatomy. He was also created Commander of the Legion of Honor.
- CTESIAS** (5th Century B. C.). A Greek physician and historian. He was born of an Asclepiad family at Cnidus in Caria, and was in the early part of his life physician to

Artaxerxes Mnemon, having, according to Diodorus Siculus, been taken prisoner of war. He was the author of a treatise on rivers, another on the Persian revenues, a history of India, which is only of value as recording the beliefs of the Persians about India, and, most famous of all, a history of Persia—the *Persica*, written in opposition to Herodotus, and professing to be founded on the Persian royal archives. Of his two histories we possess abridgements by Photius, which have been published by Stephens, (Paris, 1557-1594). As to the worth of the *Persica*, there has been much controversy, both in ancient and modern times. Its chief modern defenders have been Freret, in the *Mémoires de l'Académie des Inscriptions*, vol. v., and Bahr, in his *Prolegomenon*, to his edition of what has come down to us of the works of Ctesias (Frankfort, 1824). Aristotle rejected the testimony of Ctesias, which is opposed to that of the Jewish Scriptures, of the Persian historian Berosus, and of recently discovered cuneiform inscriptions.

CULLEN, WILLIAM (1710-90). Physician; born at Hamilton, April 15. After some experience as an apprentice apothecary in Glasgow, on board ship, and in London, he studied at Edinburgh under Munro, and started practise in his native town. William Hunter was a pupil. In 1740 Cullen graduated M.D. at Glasgow, established himself there as a physician, and lectured on medicine. In 1751 he was appointed on the chair of medicine, but in 1755 removed to Edinburgh, where for thirty-five years he occupied successively the chairs of chemistry, institute of medicine, and medicine, besides teaching clinically in the infirmary. To him is largely due the recognition of the important part played by the nervous system in health and disease. Many of his speculations as to reflex nervous action of sensory and motor fibres and the connection of sensory and motor nerves are accepted facts. He bitterly opposed the Brunonian system (see Brown, John). He died February 5. Cullen's chief works are *Synopsis Nosologiæ Methodicæ* (1769); *Institutiones of Medicine* (1772); *Practise of Physic* (1776-84); *Treatise of Materia Medica* (1789). See *Life* by Thomson and Craigie (2 vols. 1832-59).

CULPEPER, NICHOLAS (1616-54). Born in London; studied at Cambridge, and started, in 1640, to practise astrology and physic in Spitalfields. In 1649 he published an English translation of the *College of Physicians' Pharmacopœia*, *A Physical Directory*, renamed in 1654 *Pharmacopœia Londinensis, or the London Dispensatory*. This infringement of a close monopoly, together with his Puritan-

ism, brought Culpeper many enemies. In 1653 appeared *The English Physician Enlarged, on the Herbal*. Both books had an enormous sale, and both are included in Dr. Gordon's collective edition of his Works (4 vols. 1802).

CURRIE, JAMES (1756-1805). The earliest editor of Burns; was born at Kirkpatrick-Fleming manse, Dumfriesshire, May 31. He spent five years at Cabin Point, Virginia, in a mercantile situation (1771-76), then studied medicine at Edinburgh and Glasgow; and, settling in Liverpool in 1780, soon obtained a good practise. His chief medical work was the able *Reports of the Effects of Water in Febrile Disease* (1797), but he is best remembered by his edition of *Burns* (1800, 7th ed. 1813), with a Life and criticism of the poet's writings, which he undertook solely for the benefit of Burns' family. He died at Sidmouth, August 31. See *Life* by his son (1831).

CUVIER, GEORGES LEOPOLD CHRETIEN FREDERIC DAGOBERT (1769-1832). Foremost of comparative anatomists; better known by his adopted literary title, "Georges Cuvier," was born August 24, at Montbéliard, then belonging to Würtemberg, his ancestors being Huguenot refugees. He studied for the ministry at Stuttgart; and his love for zoology was confirmed by residence as a tutor on the Normandy coast (1788-94). In 1795 through Geoffroy Saint-Hilaire he was appointed assistant professor of Comparative Anatomy in the Jardin des Plantes, and elected a member of the French Institute; in 1803 he became permanent secretary of the Academy of Sciences. After the Restoration he was made Chancellor of the University of Paris, admitted into the cabinet by Louis XVIII., and in 1826 created grand-officer of the Legion of Honor. His opposition to the royal measures restricting the freedom of the press lost him the favor of Charles X.; but under Louis-Philippe he was made a peer of France in 1831, and next year Minister of the Interior. He died of paralysis, May 13. In his plans for national education, in his labors for the French Protestant Church, and in scientific work, he was alike indefatigable. He was conspicuous for an unsurpassed grasp of facts rather than for originality or power of generalisation, and proved a formidable opponent of the Theory of Descent. Although his four types—Vertebrate, Mollusc, Articulate, and Radiate—are now known to give a false simplicity to nature, his structural method made classification more natural. Now also palæontology was linked to comparative anatomy. Among Cuvier's most important works are: *Leçons d' Anatomie Comparée* (1801-5); *L' Anatomie des*

Mollusques (1816); *Les Ossements Fossiles des Quadrupèdes* (1821-24); *Histoire naturelle des Poissons* (1828-49), written in concert with Valenciennes. Best known is *Le Règne Animal distribué d'après son Organisation* (1817), which has passed through so many editors' hands. See Mrs. R. Lee's *Memoirs of Baron Cuvier* (1833), Pasquier's *Eloge* (1833), Carus's *Geschichte der Zoologie* (1872), Haeckel's *History of Creation* (1876), and Ducrotay de Blainville's *Cuvier et Geoffroy Saint-Hilaire* (1890).

CZERNAK, JOHANN NEPOMUK (1828-73) Physiologist, the founder of laryngoscopy, was born in Prague, studied at Vienna, Breslau, and Würzburg, and was professor successively at Cracow, Pesth, Jena, and Leipzig. His collected works were published in 1879.

D

DALTON, JOHN (1766-1844). Chemist; was born September 6, at Eaglesfield, near Cockermonth, the son of a Quaker weaver. He went to a Quaker school at Pardshaw Hall, and after 1781 became assistant in a boarding-school kept by a cousin in Kendal, of which in 1785 he and a brother became the proprietors. Here his love of mathematical and physical studies was developed, and here in 1787 he commenced a meteorological journal continued all his life, recording 200,000 observations. He collected butterflies and gathered a great hortus siccus and herbarium. In 1793 he was appointed teacher of mathematics and the physical sciences in New College, Manchester, and later supported himself in Manchester by private tuition. In 1794 he first described color-blindness ("Daltonism"), exemplified in his own case and that of his brother. He was an F.R.S. and an associate of the Paris Academy. In 1833 he received a pension of \$650, raised in 1836 to \$1,500. In 1837 he had a shock of paralysis, and died at Manchester, July 27. His chief physical researches were on mixed gases, the force of steam, the elasticity of vapors, and the expansion of gases by heat; and in chemistry on the absorption of gases by water, on carbonic acid, carburetted hydrogen, etc., while his atomic theory elevated chemistry to a science. Dalton was unquestionably one of the greatest of chemists. In his habits he was simple, in manners grave, and reserved but kindly. He "never found time" to marry. See *Lives* by Dr. Angus Smith (1836), Dr. Henry (1854), Lonsdale (1874), and Sir H. Roscoe (1895).

DALTON, JOHN CALL (1825-89). An American physiologist and physician; born in Chelmsford, Massachusetts, Feb-

ruary 2, graduated at Harvard in 1844. He became, successively, professor of physiology in the University of Buffalo, the Vermont Medical College and the New York College of Physicians and Surgeons. During the Civil War he was an army surgeon. He published a *Treatise on Human Physiology*, which passed through numerous editions; *Experimental Methods of Medicine*; *Topographical Anatomy of the Brain*; and other works. He died February 12.

DARCET, JEAN (1725-1801). French physician and chemist; born in Donazit, September 7; died in Paris, February 13. He accompanied the celebrated Montesquieu to Paris in 1742, and remained with him until his death as a literary assistant. He afterward devoted himself to chemistry, especially to technical chemistry, was appointed professor of chemistry in the College of France, and regent of the medical faculty. Darcet made many experiments with a view to the improvement of the manufacture of porcelain. He also tried the effect of fire on the various kinds of earths, and demonstrated the volatility of the diamond. In 1776 he published a memoir on the geology of the Pyrenees. He succeeded Macquer as a member of the Academy of Sciences and director of the manufactory of Sèvres. He was afterward appointed inspector-general of the assay of coin, and inspector of the Gobelins manufactory. He made several important chemical discoveries, and contributed much to the present improved state of the science. A fusible alloy of lead, bismuth, and tin is named after him.

DARCET, JEAN PIERRE JOSEPH (1777-1844). A French chemist; born in Paris, August 31. His researches led to great improvement in the manufacture of gunpowder, and the composition of bronze, and of steel. M. Darcet also discovered a method of producing soda from common salt. His father, Jean Darcet, directed the manufacture of porcelain at Sèvres, and proved the combustibility of the diamond. He died in Paris, August 2.

DARWIN, ERASMUS (1731-1802). Physician and poet; was born at Elston Hall, near Newark, December 12, entered St. John's College, Cambridge, in 1750, graduated B.A. in 1754, and then studied medicine at Edinburgh. After trying a practise at Nottingham, he removed to Lichfield, where he married and became a popular physician and prominent figure, from his ability, his radical and freethinking opinions, his poetry, his eight-acre botanical garden, and his imperious advocacy of temperance in drinking. After his second marriage in 1781, he settled in Derby, and then at Breadsall Priory, where he died suddenly, April 18. By his first wife

he was grandfather of Charles Darwin; by his second of Francis Galton. His philosophy of nature is inconsequent and untenable, but many of his ideas are original and contain the germs of important truths. Sometimes he is exceedingly happy in seeing analogies in nature; at other times he is quite fantastical. In his verse, too, amid frequent extravagance and incomprehensibility, there burst forth strains of genuine poetry. The "Loves of the Plants" (1789), a part of his *Botanic Garden*, was happily burlesqued in the "Loves of the Triangles" in the *Anti-Jacobin*. Interest in Darwin's speculations has been revived by the recognition of his partial anticipation of Lamarck's views on evolution and so of his own famous grandson's. His chief prose works are *Zoonomia, or the Laws of Organic Life* (1794-96) and *Phytologia, or Philosophy of Agriculture* (1799). See Krause's *Erasmus Darwin* (Eng. trans. 1879).

DAUGLISH, JOHN (1824-64). An Edinburgh M.D. who in 1856 invented aerated bread; was born in London and died at Malvern.

DAVIS, EDWIN HAMILTON (1811-1888). An American physician and archæologist. Born in Ross County, Ohio, January 22; died, at New York, May 15. His works include "Monuments of the Mississippi Valley" (in *Smithsonian Contributions to Knowledge*, 1848), etc.

DAVY, SIR HUMPHREY (1778-1829). Chemist; was born December 17, at Penzance, where his father was a wood-carver. At the school there and at Truro he developed a taste for story-telling, poetry, and angling, and for experimental science. In 1795 he was apprenticed to a Penzance surgeon, wrote verses, made chemical experiments, entered on an encyclopædic course of study, and in 1797 seriously took up chemistry. Dr. Beddoes, who in 1798 established a Pneumatic Institute at Clifton, took him as his assistant. Here he met Coleridge and Southey, and experimented on the respiration of gases (more than once nearly losing his life), and discovered the effect of laughing-gas. The account of his *Researches, Chemical and Philosophical* (1799), led to his appointment as lecturer to the Royal Institution. He delivered his first lecture in 1801; and his eloquence and the novelty of his experiments soon attracted brilliant audiences. In 1803 he began researches in agriculture, on which he delivered his epoch-making lectures—*Elements of Agricultural Chemistry* (1813). His fame chiefly rests in the views originated in his Bakerian lecture on *Some Chemical Agencies of Electricity* (1806), followed up by the grand discovery that the alkalis and earths are compound sub-

stances formed by oxygen united with metallic bases. He first decomposed potash in 1807; when he saw the globules of the new metal, *potassium*, his delight was ecstatic. He next decomposed soda and the alkaline earths, baryta, strontia, lime, and magnesia; and discovered the new metals, *sodium*, *barium*, *strontium*, *calcium*, and *magnesium*. The earths proper proved to consist of metals united to oxygen. He lectured in Dublin in 1808-9, and received the LL.D. of Trinity College. In 1812 Davy was knighted, and married Mrs. Apreece, *née* Jane Kerr (1780-1855), a lady of considerable wealth; in 1813 he resigned the chemical chair of the Royal Institution, when he was elected honorary professor of chemistry. To investigate his new theory of volcanic action he visited the continent with Faraday, and was received with the greatest distinction by the French *savans*, though England and France were at war. In 1815 he investigated fire-damp and invented the safety-lamp. He was created a baronet in 1818, and in 1820 succeeded Sir Joseph Banks as President of the Royal Society. In 1820-23 his researches on electro-magnetism were communicated to the society. In 1826 he had an apoplectic attack. He twice visited the Continent for the recovery of his health, and died at Geneva, May 20. Among his writings were *Elements of Chemical Philosophy* (1812); *On the Safety-lamp* (1818); *Salmonia, or Days of Fly-fishing* (1828); and *Consolations in Travel* (1830)—all included in his *Collected Works* (9 vols. 1839-40). See *Memoirs* (1836) by his brother John Davy, M.D. (1790-1868), who also wrote on Ceylon, physiology, the Ionian Islands, etc.; Sir Humphrey's *Fragmentary Remains* (1858); and *Lives* by Dr. Paris (1831) and Dr. T. E. Thorpe (1896).

DEANE, JAMES (1801-58). An American geologist; born in Colerain, Mass., February 14; died in Greenfield, Mass., June 8. He studied law and medicine, and practised the latter. Much of his life was given to geological research, and he was the discoverer of fossil footprints in the Red Sandstone of the Connecticut Valley. This discovery attracted widespread attention on the part of geologists, and gave rise to a careful study of that region on the part of several of the more prominent naturalists. An illustrated work containing the results of his geological labors has been issued since his death by the Smithsonian Institution. Dr. Deane was a contributor to scientific and medical journals.

DEJEAN, PIERRE FRANÇOISE AIME AUGUSTE (1780-1845)
A French general and entomologist, son of Jean François Aimé, Count Dejean. He was born at Amiens, and took up

the study of medicine, but soon entered Napoleon's army, with which he went to Spain and to Russia. In the army he attained the rank of general of division, and at Waterloo acted as adjutant to the Emperor. Devoting all his leisure to science, Dejean made extensive collections of insects, and contributed much to our knowledge of Coleoptera (beetles). He is the author of the following works: *Iconographie des coléoptères d'Europe* (1829-36); *Species générales des coléoptères* (1825-37); and *Histoire naturelle et iconographie des coléoptères d'Europe*. The last-named work is still a standard on the subject of Coleoptera. The works were written by Dejean in conjunction with Boisduval and Aubé.

DESAULT, PIERRE JOSEPH (1744-95). A brilliant French anatomist and surgeon. He became professor of anatomy in Paris in 1776; was admitted to membership in the corporation of surgeons in the same year, and subsequently held various positions of honor. In 1782, he was appointed surgeon-major to the De la Charité Hospital, and came to be regarded as one of the ablest surgeons of his time. He next went to the Hôtel Dieu, and after Moreau's death the surgical department of the hospital was entrusted to him. There he instituted a clinical school of surgery—the first of its type—attracting pupils from all over Europe. He introduced system and precision into surgery, and made many valuable improvements in the instruments used in that profession. His pupil, the celebrated Bichat, published his *Œuvres chirurgicales* (1798-1803). Consult Labruné, *Etude sur la vie et les travaux de Desault* (Besançon, 1867).

DESGENETTES, NICOLAS RENE DUFRICHE (1762-1837). A French military surgeon; born in Alençon, May 23; died February 3. He was chief of the medical corps of the army of Italy in 1795-96, and of the Grand Army of the Empire until the battle of Waterloo. He was dismissed from his position in the army at the Restoration, and shortly afterward was obliged to give up his professorship in the College of France. He was, however, restored in part, by his election in 1832 to the position of physician of the Invalides. He wrote a number of medical treatises, one of which, *The Medical History of the Army of the East* (1802), is valued to-day.

DEWEES, WILLIAM POTTS (1768-1841). An American physician; born in Pottsgrove, Pennsylvania, May 5; died in Philadelphia, May 18. He studied medicine at the University of Pennsylvania, and began to practise at Abington. The yellow fever depleted the ranks of Philadelphia phy-

sicians in 1793 and Dr. Dewees removed to that city. He won distinction in the department of obstetrics, and in 1826 was appointed to a professorship of obstetrics and diseases of women and children in his *alma mater*. He has written medical books on these two specialties and on the *Practise of Medicine* (1830).

DICKSON, SAMUEL HENRY (1798-1872). An American physician and author; born in Charleston, South Carolina, September 20; died in Philadelphia, March 31. He was graduated at Yale in 1814; as M.D. at the University of Pennsylvania in 1819; and received the degree of LL.D. from the University of New York, 1853. From 1824 to 1858, with a brief interval, he was professor of the institutes and practise of medicine in the Charleston, South Carolina, Medical College, which he helped to found. From 1847 to 1850 he held a similar chair in the University of New York, and from 1858 until his death, was professor in Jefferson Medical College, Philadelphia. Owing to his genial, social and literary accomplishments, he has been compared to Oliver Wendell Holmes, whom he also resembled in the classically elegant style of his medical writings. Among his medical works are *Studies in Pathology and Therapeutics* (1867). He also wrote occasional essays and poems, and a treatise to prove the inferiority of the negro race.

DIEFFENBACH, JOHANN FRIEDRICH (1792-1847). A German surgeon; born at Königsberg, February 1; died at Berlin, November 11; served as a volunteer in a Mecklenburg corps during the campaigns of liberation (1813-15); and while studying surgery at Königsberg and Bonn, supported himself by giving lessons in fencing and swimming. He followed the course of the schools of Vienna and Paris, and received the degree of doctor at Würzburg in 1822, the subject of his thesis being *Nennulla de Regeneratione et Transplantatione*. He settled at Berlin, where his talent and manual skill as an operator gained him great distinction, and in 1840 he was surgeon-in-chief of the Charity Hospital there. Science is indebted to him for new instruments invented, and new methods of forming artificial noses, eyelids, lips, etc., and of curing stammering and squinting. Among his works are *Chirurgische Erfahrungen* (1829-34); *Ueber die Durchschneidung der Schnen und Muskeln* (1841); and *Der Äther gegen den Schmerz* (1847).

DIMSDALE, THOMAS (1712-1800). A physician who wrote on inoculation; went to Russia, in 1768 and 1874 to inoculate the Empress Catharine, and sat for Hertford, England, in two parliaments.

- DIOSCORDIES, PEDANIUS** (First Century A. D.). A Greek physician from Anazarba in Cilicia, lived in the 1st century A. D., and left a great work on materia medica. The best edition is Sprengel (2 vols. 1829-30).
- DIPPEL, JOHANN KONRAD** (1673-1734). A German chemist and alchemist, inventor of the loathsome and discarded panacea (Dippel's Animal Oil). See *Life* by Bender (Bonn, 1882).
- DOBEREINER, JOHANN WOLFGANG** (1780-1849). A chemist, of Jena, Saxe-Weimar, Germany; inventor of *Döbereiner's Lamp*.
- DOLLINGER, IGNAZ** (1770-1841). Born at Bamberg, Bavaria, May 24; died at Munich, January 14. A German physiologist and comparative anatomist; professor successively at Bamberg, Würzburg, Landshut, and Munich. He wrote *Grundzüge der Physiologie* (1835), *Werth und Bedeutung der vergleichenden Anatomie* (1814), etc.
- DOVER, THOMAS** (1660-1742). A London M.D., the inventor of "Dover's Powder." In 1709, while captain of a privateer, rescued Alexander Selkirk from the island of Juan Fernandez.
- DOWLER, BENNET** (1797-1879). American physician, born in Moundsville, Va., April 16; died in New Orleans. He graduated from the University of Maryland, and settling in New Orleans founded the New Orleans Academy of Sciences, and was for a number of years editor of the *Medical and Surgical Journal*. He made a number of experiments with the human body immediately after death, resulting in important discoveries in regard to capillary circulation, contractibility, etc., and also investigated the subject of animal heat. He wrote *Tableau of the Yellow Fever of 1853* (1854).
- DRAKE, DANIEL** (1785-1852). An American physician; born in Plainfield, N. J., October 20; died in Cincinnati, Ohio, November 6. He was graduated from the University of Pennsylvania in 1815, and settled for a time in Cincinnati. He was professor of materia medica in Transylvania University, Ky., and taught in other medical schools until 1820, when he organized the Medical School of Ohio, in Cincinnati; he was professor there, and in the University of Louisville, Ky. He wrote *Pictures of Cincinnati and Miami County* (1815); *Practical Treatise on the History, Prevention and Treatment of Epidemic Cholera* (1832); *Systematic Treatise on the Principal Diseases of the Interior Valley of North America* (1850-54); and was editor of the *Western Medical and Physical Journal*.

- DRAKE, FRANCIS** (1696-1771). An English surgeon; was born at Pontefract and died at Beverley. He was author of *Eboracum* (1736), and, conjointly with the bookseller Cæsar Ward, of the *Parliamentary History of England* (22 vols. 1751-60).
- DRAKE, NATHAN** (1766-1836). English physician; born at York, for forty years practised at Hadleigh, Suffolk. He wrote *Shakespeare and his Times* (1817) and *Memorials of Shakespeare* (1828).
- DRAPER, JOHN CHRISTOPHER** (1835-1885). American physician; born in Prince Edward County, Va., March 31; died in New York, December 20. He was graduated from the medical department of New York University, was professor of physiology in that institution 1858-60, and professor of chemistry in the medical department in 1866-85. He was also professor of chemistry at Cooper Union, and professor of physiology and natural history at the College of the City of New York. He wrote *On Respiration* (1856); *Text-book on Anatomy, Physiology and Hygiene* (1866); *Practical Laboratory Course in Medical Chemistry* (1882); *Text-Book of Medical Physics* (1885).
- DRAPER, JOHN WILLIAM** (1811-82). American author and man of science; born at St. Helens, near Liverpool, May 5, and in 1833 emigrated to Virginia. In 1839 he became professor of Chemistry in the University of New York, and from 1850 to 1873 was president of its medical department. Among his works are *On the Forces that Produce the Organization of Plants* (1844), *Physiology* (1856), *History of the Intellectual Development of Europe* (1862), *History of the American Civil War* (1867-70), *History of the Conflict between Science and Religion* (1874), and *Scientific Memoirs* (1878). He died January 4.
- DUBOIS-REYMOND, EMIL** (1818-96). A German physiologist; born in Berlin, November 7. In 1841 he began the researches in animal electricity with which his name is chiefly identified. In 1858 he succeeded Johannes Müller in the chair of physiology at Berlin, and in 1867 he was elected permanent secretary of the Academy of Sciences. He wrote a number of articles descriptive of his experiments. Among them are *A Description of the Apparatus and Experiments of Electro-Physiology* (1863); *Leibnitz and Modern Science* (1871); and *The Limits of Our Knowledge of Nature* (1872).
- DUCHENNE, GUILLAUME BENJAMIN** (1806-75). A French physician, called "Duchenne de Boulogne," born at Boulogne-sur-Mer, and educated in Paris. Here he became

established in 1842, and soon acquired fame as an investigator in electric diagnosis and electrotherapeutics, of which science he is sometimes considered the founder. He was a pioneer in the localization of the electric current and its adaptation in determining the physiology of various muscles of the body. Scarcely less important were his researches on the pathology of the nervous system. His numerous publications include: *De l'électrisation localisée et de son application à la pathologie et à la thérapeutique* (3d ed., 1872); *Mécanisme de la physionomie humaine, ou analyse électro-physiologique de l'expression des passions* (with 72 photographic illustrations, 1862); *Physiologie des mouvements, etc.* (1867).

DUDLEY, BENJAMIN WINSLOW (1785-1870). Born in Spottsylvania County, Va., April 12; died at Lexington, Ky., January 20. An American surgeon, especially noted as a lithotomist.

DUFFIELD, ALEXANDER JAMES (1821-90). Chemist, mining engineer, traveler, author, and translator of *Don Quixote*; was born at Tettenhall, Staffordshire, England. See his *Recollections of Travel* (1889).

DUFOUR, JEAN MARIE LEON (1780-1865). A French entomologist. He was born at Saint Sever-sur-l'Adour, where he practised medicine until his death. His investigations on the anatomy and metamorphoses of spiders, grasshoppers, scorpions, and other insects appeared in a series of more than two hundred articles which were published in the *Annals des sciences naturelles*, the *Annals de la Société entomologique de France*, and similar publications, during a period of fifty years (1811-61). One of his most important discoveries was that of the parasitic Gregarindæ. Among his principal works may be mentioned *Recherches sur les hémiptères* (1833).

DUMAS, JEAN BAPTISTE ANDRE (1800-84). A French chemist; born at Alais, Gard, July 14. He studied at Geneva, and coming to Paris in 1821, was first a lecturer in the École Polytechnique, then professor of Chemistry in the Athénée, the École Centrale (founded by himself), and finally, the Sorbonne. He came forward into public life (1849), was appointed Master of the Mint (1868), and elected to the Academy (1875), and died at Cannes, April 11. His chief works are *Traité de Chimie appliquée aux Arts* and *Leçons sur la Philosophie Chimique*. See forty-page memoir by A. W. Hofman in *Nature*, February 6, 1880.

DUMERIL, ANDRE MARIE CONSTANT (1774-1860). French physician and zoologist; born at Amiens, France, January

1; died, at Paris, August 2. He published *Erpétologie générale* (1835-51), etc.

DUNCAN, JAMES MATTHEWS (1826-90). Born at Aberdeen, in 1877, was appointed to the chair of obstetric surgery at St. Bartholomew's, London.

DUNGLISON, ROBLEY (1798-1869). Physician; born at Keswick, studied medicine in London, Edinburgh, and Erlangen, and from 1824 held professorships in the United States, where he was the friend of Presidents Jefferson and Madison. See *Life* (1870).

DUPUYTREN, GUILLAUME, BARON (1777-1835). Born Pierre-Buffière, Haute-Vienne, France. Professor of clinical surgery in Paris, from 1812; invented many surgical instruments. See *Life* by Cruveilhier (1841).

DUTROCHET, RENE JOACHIM HENRI (1776-1847). An eminent French physician. In 1808 he was appointed by Joseph Bonaparte head physician to the military hospital at Burgos, Spain, then devastated by typhus fever. He returned to France in the following year, and gave himself up exclusively to the study of physics and physiology. In 1831 he became a member of the Institute. The results of his researches are contained in his *Mémoires pour servir à l'histoire anatomique et physiologique des végétaux et des animaux* (1837).

DUVERNEY, GUICHARD JOSEPH (1648-1730). A French anatomist; born August 5; died, September 10.

DWIGHT, BENJAMIN WOOLSEY (1780-1850). An American physician, son of Timothy Dwight of Yale; born in Northampton, Massachusetts, February 10. He was in early life a physician, and wrote a valuable treatise on *Chronic Debility of the Stomach*. He became a farmer near Clinton, and was for many years treasurer of Hamilton College. He died in Clinton, New York, May 18.

DWIGHT, NATHANIEL (1770-1831). An American physician; born in Northampton, Mass., and was the brother of the elder Timothy Dwight, president of Yale. He was probably the first to propose the present system of retreats for the insane; and his *Short System of the Geography of the World* (1814) was the first school geography published in the United States. He also wrote *A Compendious History of the Signers of the Declaration of Independence* (1831).

E

EARLE, PLINY (1809-92). American physician; born in Leicester, Mass., December 31. He was physician in Bloom-

dale Asylum (1844-49), and superintendent of the state hospital for the insane at Northampton, Massachusetts, for more than twenty years. He first introduced the system, now in general use of lecturing to the insane on topics of scientific and general interest. He was a prominent member of the American Medical Association and other societies, and was a frequent contributor to medical journals. He published *The Curability of Insanity* (1887), and a number of other works in regard to the insane. He died in Northampton, Massachusetts, May 18.

ECKER, ALEXANDER (1816-75). A German anatomist and anthropologist; born at Freiburg, and was educated at the university in that city, and at Heidelberg, and Vienna. He was professor of anatomy and physiology at Basel from 1844 to 1850, when he was called in the same capacity to Freiburg, where he formed a valuable anthropological collection. The Museum of Ethnology at Freiburg was also established by him. He was co-editor of the *Archiv für Anthropologie*, and wrote the following important publications: *Erläuterungstafeln zur Physiologie und Entwicklungsgeschichte* (1850-59), *Crania Germania*, with 38 plates (1863-65); *Die Hirnwindungen des Menschen* (1869); *Die Anatomie des Frosches, ein Handbuch für Physiologen, Aerzte und Studierende* (3 parts, 1864-82; part I, 3d ed. 1896).

EICHWALD, EDUARD GEORG (1838-89). A Russian physician; son of Karl Eduard Eichwald, born at Vilna, and educated at the Medico-Surgical Academy at Saint Petersburg. He was physician-in-ordinary, from 1865-1875, to the Grand Duchess Helen A. Pavlovna, who made him the legatee of a sum which enabled him to found the clinical institute, subsequently named in honor of its patroness. In 1866 Eichwald was appointed professor of medical diagnosis and general therapy at the Medico-Surgical Academy, and in 1883 he became professor at Saint Petersburg. His works, published chiefly in German, include: *Die Kolloidentartung der Eierstöcke* (1864); *Beiträge zur Chemie der gewebbildenden Substanzen* (1873); and a treatise on general therapeutics in Russian, 5th ed. by G. Schapiro (1892).

ELLIOTSON, JOHN (1791-1868). Physician; born in London, became in 1831 professor in London University, and helped to establish University College Hospital. His conversion to mesmerism (1837) cost him his professorship in 1838, but hardly injured his large practise. He was one of the first to use the stethoscope; experimented on the action of drugs, encouraged clinical study, and founded the Phreno-

logical Society. His name will live, from the dedication of Thackeray's *Pendennis*.

ELLIOTT, SAMUEL MACKENZIE (1811-73). An American physician; born at Inverness, Scotland. He was educated at the Royal College of Surgeons in Glasgow. In 1833 he came to the United States, and finally established himself in New York City, as an oculist. He served in the Civil War as lieutenant-colonel of the Highland Guard, and was wounded in the first battle of Bull Run. Subsequently he was brevetted brigadier-general.

ELSBURG, LOUIS (1836-85). German-American physician; born in Gerlohn, Prussia, died in the United States. He introduced the art of laryngoscopy in the United States, wrote many papers on the throat and its diseases, notably, *The Throat and the Production of Voice*; was the first to illustrate the character of undertones and divisions of sound in articulation, and invented many instruments which are used in surgical treatment of the throat and ear.

ENGEL, JOSEPH (1816-99). An Austrian zoölogist and anatomist; born January 29, in Vienna, where he received his education. His early investigations in anatomy having won him considerable reputation among zoologists, he was appointed, in 1844, to a professorship of descriptive anatomy in the University of Zurich. Five years later he became professor of pathological anatomy in Prague, and in 1854 professor of descriptive anatomy in Vienna. Important among his published works are *General Pathological Anatomy* and *Special Pathological Anatomy*. These works place him among the foremost authorities upon the subject of which they treat.

ENGELBRECHT, THEODOR (1813-92). A German physician and pomologist; born near Brunswick. In 1862 he induced the Government to establish the Pomological Institute, and he was the first president in the German Pomological Society (1880-89). His principal work is *Deutschland's Aepfelsorten* (1889).

ENNEMOSER, JOSEPH (1787-1854). A medico-philosophic writer; born at Hintersee, in the Tyrol, November 15. He commenced his academic studies at Innsbruck in 1806. On the rising of the Tyrolese against the French, in 1809, Ennemoser honorably distinguished himself in battle on several occasions. In 1816 he took the degree of doctor of medicine, and in 1819 was made professor of medicine at the new University of Bonn. In 1841 he went to Munich, where he obtained a great reputation by the application of magnetism as a curative power. He wrote a number of books, of which

the *History of Animal Magnetism* is most widely known. He died at Egern, Bavaria, September 19.

ERASISTRATUS (about 300 B. C.). Founder of a school of medicine; was born in the island of Cœos, settled in Alexandria, and died in Samos. Of his writings only some fragments have been preserved.

ERDMANN, OTTO LINNE (1804-69). German chemist; born in Dresden, April 11; died in Leipsic, October 9. His researches embrace a wide range of subjects. He examined minutely the technology of nickel, and described some of its compounds; analyzed a number of minerals and slags, and experimented on several other points of inorganic chemistry. In organic chemistry his chief research is upon indigo, in the course of which he discovered isatin. The most important work in which he engaged was that upon the combining weights of several of the elements. In company with Marchand he made determinations of oxygen, carbon, hydrogen, sulphur, calcium, copper, mercury, and some others, and his numbers have been fully confirmed by subsequent experimenters. He was the author of a chemical text-book and for many years conducted the *Journal für technische und ökonomische Chemie*, which was afterward changed to the *Journal für praktische Chemie*.

ERICHSEN, SIR JOHN ERIC (1818-96). In 1850, became professor of Surgery at University College, London, and was created a baronet in 1895.

ERXLEBEN, JOHANN CHRISTIAN (1744-77). A German physician and naturalist. He was born at Quedlinburg, and was a son of the highly gifted Dorothea Christine Erxleben, the first woman who obtained the degree of doctor of medicine in Germany. He was educated at Göttingen, where he occupied the chair of natural philosophy from 1771 until his death. His principal works are the text-books *Anfangsgründe der Naturgeschichte* (4th ed. 1791); and *Anfangsgründe der Naturlehre* (8th ed. 1794).

EUSTACHIO, BARTOLOMMEO (Died 1574). Italian anatomist, born in San Severino, died professor of medicine, in Rome. He made important discoveries regarding the ear and the heart, to which his name is attached. See his *Opuscula Anatomica* (1564) and *Tabula Anatomica* (1714).

EUSTIS, WILLIAM (1753-1825). Born at Cambridge, Mass., June 10; died at Boston, February 6. An American physician and politician. He was secretary of war 1809-13, and governor of Massachusetts 1823-25.

EVE PAUL FITZSIMONS (1806-77). An American physi-

cian; born near Augusta, Georgia, June 27. He graduated at the medical department of the University of Pennsylvania in 1828; studied in London and Paris; served as an ambulance surgeon during the Revolution in 1830, and as a regimental surgeon in the Polish War. In 1831 he returned to the United States, and in 1832 became professor of surgery in the Medical College of Georgia. In 1849 he was elected surgical professor in the University of Louisville; in 1850 in the University of Nashville; in 1868 in the University of Missouri, and later returned to Nashville as professor of operative and clinical surgery. In 1870 he became professor of the principles of surgery in the medical college at Nashville, and in 1876 took a prominent part in the International Medical College at Philadelphia. During the Civil War he served with the Confederate army in Mississippi and Georgia. He published several works on surgery, besides contributing extensively to various medical journals. He died at Nashville, Tennessee, November 3.

F

FABRICIUS, or Fabrizio, GIROLAMO (1537-1619). Anatomist; born at Acquapendente near Orvieto; was from 1562 professor of anatomy at Padua. Harvey was one of his pupils. He discovered the valves of the veins in 1574. His *Opera Chirurgica* (1617) passed through seventeen editions.

FALCONER, HUGH (1808-65). Palæontologist; was born at Forres, February 29. He graduated M.D. at Edinburgh in 1829, joined the Bengal medical service, became (1832) keeper of the botanic garden at Saháranpur, and discovered many fossils in the Siwálik hills. He made the first experiments in growing tea in India. Back in England for his health (1842), he wrote on Indian botany and palæontology, arranged Indian fossils in the British Museum and East India House, and prepared his great illustrated folio, *Fauna Antiqua Sivalensis* (1846-49). He returned to India in 1847 as superintendent of the botanic garden and professor of botany at Calcutta, came home in 1855, and died in London, July 31. His *Palæontological Memoirs and Notes* were published in 1868.

FALCONER, WILLIAM (1744-1824). An English physician and miscellaneous writer; born at Chester, England, February 23; died at Bath, August 23. In 1770 he began to practise medicine at Bath, where he was physician to the Bath General Hospital 1784-1819. He published *Remarks on the Influence of Climate,—Nature of Food, and Way of Life*

on Mankind (1781), *A Dissertation on the Influence of Passions upon Disorders of the Body* (1788), etc.

FALLOPIUS, or Fallopio, **GABRIELLO** (about 1523-62).

One of the greatest anatomists of his time; a native of Modena. He studied medicine at Ferrara, and, after a European tour, became teacher of anatomy in that city. He thence removed to Pisa, and from Pisa, at the instance of Cosmo I., Grand-duke of Tuscany, to Padua, where, besides the chairs of anatomy and surgery and of botany, he held the office of superintendent of the new botanical garden.

FARADAY, MICHAEL (1791-1867). Chemist and natural philosopher; born, a blacksmith's son, at Newington Butts near London, September 22. At thirteen he was apprenticed to a bookbinder, but devoted his leisure to science. Chance having procured him admission in 1812 to the chemical lectures of Sir Humphrey Davy, the latter engaged him as his assistant at the Royal Institution; and with him he visited the Continent. On their return Davy confided to Faraday the performance of experiments, which led to the condensation of gases into liquids by pressure. In 1827 he succeeded to Davy's chair of chemistry in the Royal Institution; and he was created D.C.L. in 1832. His treatise on *Chemical Manipulation* (1827; 2d ed. 1842) is even now a very valuable book of reference. His suggestions as to the preparation of the lungs for diving and the ventilation of lighthouse lamps are notable, as are also his letter on table-turning and his lecture on mental education. The most prominent of his publications on physical science were on the condensation of the gases, limits of vaporisation, optical deceptions, acoustical figures, re-gelation, relation of gold and other metals to light, and conservation of force. His Christmas lectures at the Royal Institution, though the subjects were often most abstruse, charmed and attracted all classes of hearers. Beside his lectures on *The Non-metallic Elements* and on *The Chemical History of a Candle*, we have his profound *Physical Forces*. But the great work of his life is the series of *Experimental Researches on Electricity*, published in the *Philosophical Transactions* during forty years and more. The following are almost all discoveries of the *first* importance: Induced electricity (1831); the electrotonic state of matter (1831); identity of electricity from different sources (1833); equivalents in electrochemical decomposition (1834); electrostatic induction—specific inductive capacity (1838); relation of electric and magnetic forces (1838); the electricity of the Gymnotus (1839); hydro-electricity (1843); magnetic rotatory polari-

sation (1846), effected by means of the optical glass; diamagnetism (1846-49); relation of gravity to electricity (1851); and atmospheric magnetism (1851). Faraday, who had received a pension in 1835, was in 1858 given a house in Hampton Court. In 1862, as adviser to the Trinity House, he advocated the use of magneto-electric light in lighthouses. A devout Christian, a member of the body called Sandemanians or Glassites, he died at Hampton Court, August 25. See *Lives* by Tyndall (1868; 5th ed. 1894), Bence Jones (1870), J. H. Gladstone (1872), and W. Jerrold (1891).

FARRE, ARTHUR (1811-87). A great London midwifery doctor; professor at King's College 1841-62.

FAUST, BERNHARD CHRISTOPHER (1755-1842). A German physician; born at Rotenburg, Hesse, was educated at Göttingen and Rinteln, and in 1788 became physician in ordinary at Bückeburg. He was one of the first physicians in Germany to adopt vaccination, and published on that subject: *Ueber die Kuhpocken und deren Impfung* (1801); and *Oeffentliche Anstalten, die Blättern durch Einimpfen der Kuhpocken auszurotten* (1804). The most important of his numerous hygienic works is the *Gesundheitskatechismus zum Gebrauche in den Schulen und beim hauslichen Unterricht* (1794, and frequently republished). Of the three English translations of the work, the latest is entitled *A New Guide to Health, Compiled from the Catechism of Dr. Faust* (1832).

FAUVEL, SULPICE ANTOINE (1813-84). A French physician. He was born and educated in Paris, and subsequently went to Turkey, where he became a member of the Sanitary Council at Constantinople (1848). Shortly after his return to Paris in 1866, he was appointed inspector-general of the Sanitary Department of the French Government. His works on the Oriental plague, the cholera, which he had closely studied during his long residence in the East, and typhus have been extremely valuable, and have had much influence on the quarantine regulations of numerous governments. His works include: *Le choléra, étiologie et prophylaxie* (1868); *Rapports sur l'organisation du service des quarantaines en Turquie* (1873); *Règlement général de police sanitaire maritime* (1876).

FEHLING, HERMANN (1811-85). German chemist; born in Lübeck, Germany; June 9, died July 2. He studied chemistry in Heidelberg, at Giessen in Liebig's laboratory and at Paris. He became professor of chemistry in the Polytechnic School at Stuttgart, and professor emeritus in 1882. He

- had great authority in the educational and manufacturing circles of his time, as a teacher and prescriber of chemical formulæ for commercial products, such as sugar, and mineral waters. The so-called Fehling's Solution is famous. He wrote *Text-book of Organic Chemistry*; translated Payen's *Précis de Chimie Industrielle*, and edited a new edition of *Glossary of Chemical Terms*.
- FERGUSSON, SIR WILLIAM** (1808-77). Surgeon; born at Prestonpans, March 20. He studied medicine in Edinburgh, and in 1836 became a surgeon in the Infirmary. In 1840 he went to London to occupy the chair of Surgery in King's College. In 1866 he was made a baronet, in 1867 sergeant-surgeon to the Queen, and in 1870 president of the Royal College of Surgeons, London. He died February 10. See *Life* by H. Smith (1877).
- FERNANDEZ MADRID, JOSE** (1789-1830). Colombian poet and statesman; born in Cartagena, Colombia, February 9; died near London, England, June 28. He was for a short time president of his country in 1816, but was afterward exiled to Cuba, where for nine years he was prominent as a physician. In 1825 he was sent by Bolivar, as minister to England. He published a volume of poems: *The Roses* (1822); also two tragedies, *Atala* (1822); and *Guatimozin* (1827).
- FERNEL, JEAN** (1497-1558). A noted French physician and medical writer; professor of medicine at Paris; surnamed "the Modern Galen;" born at Clermont-en-Beauvoisis, France; died there, April 26.
- FEUCHTERSLEBEN, ERNST von** (1806-49). An Austrian physician, poet, and philosopher; born at Vienna, April 29; died there, September 3. He became dean of the medical faculty at Vienna in 1845, and in 1848 was under-secretary of state in the ministry of public instruction. His works include *Lehrbuch der ärztlichen Seelenkunde* (1845), *Zur Diätetik der Seele* (1838), and *Gedichte* (1836).
- FIGUIER, GUILLAUME LOUIS** (1819-94). A French scientific writer; born at Montpellier, February 15. He studied chemistry there, and in 1841 received the degree of M.D. He was appointed professor at the Montpellier School of Pharmacy in 1846, and seven years later removed to Paris to occupy a similar post there. He has published *Exposition et Histoire des Principales Découvertes Scientifiques Modernes* (1851); *L'Alchimie et les Alchimistes* (1854); *Histoire du Merveilleux dans les Temps Modernes* (1859-60); *Les Nouvelles Conquêtes de la Science* (1883-85); *Les Mystères de la Science* (1887). A number of his popular



presentations of science and natural history have been translated into English. Among these are *The Vegetable World*; *The Ocean World*; *The Wonders of Science*; and *The Wonders of Industry*.

FISCHER, WALDHEIM GOTTHELF von (1771-1853). A Russian physician and naturalist; born at Waldheim, Saxony. After holding a professorship at Mainz, he accepted a call to Moscow (1803), where he became professor of natural history and director of the university museum devoted to that branch of science. In 1808 he founded the Society of Naturalists at Moscow. He published numerous works on comparative anatomy, on the nutrition of plants, and on galvanism. One of the most important of these is *Bibliographia Palwontologica Animalium Systematica* (2d ed. 1834).

FISHER, GEORGE JACKSON (1825-93). American physician; born in Northcastle, N. Y., November 27. He began practise in 1849, and in 1853-54 was physician and surgeon to the New York state prison at Sing Sing (Ossining). For twenty years he was United States examining surgeon, and in 1874 was president of the State Medical Society. He wrote many works on anatomy, surgery and medicine, among the chief of which are *Animal Substances Employed as Medicines by the Ancients* (1862); *Teratology* (1875); and *History of Surgery* (1886). He died in Sing Sing, New York, February 3.

FLINT, AUSTIN (1812-86). American physician; born October 20, in Petersham, Mass. His professional career began in 1833, upon his graduation from Harvard; he practised in Boston, Mass., and then in Buffalo, N. Y. In 1844-45 he was a professor at the Rush Medical College, in Chicago, Ill., and from 1847, for six years, in the Buffalo Medical College. From 1852 to '56 he was a professor in the Louisville University; in 1856, in the Buffalo Medical College; in 1858, in the New Orleans School of Medicine; in 1861, in the Long Island College Hospital; and from 1868 until his death was professor of the principles and practise of medicine in the Bellevue Hospital Medical College, New York. He was consulting-physician to various hospitals, and from 1872 to '85 was president of the New York Academy of Medicine. He was a member of many medical and scientific bodies, both in America and Europe, and was present at several important medical congresses as a delegate. His contributions to medical literature were numerous. Among them are *Principles and Practice of Medicine* (1866); *Phthisis: Its Anatomy, Etc.* (1875); *Physical Exploration of the Lungs*

by *Auscultation and Percussion* (1882); and *Medical Ethics and Etiquette* (1883). He died in New York City, March 13.

FLOURENS, MARIE JEAN PIERRE (1794-1867). Physiologist; attracted attention by works on the nervous system, and, after lecturing for Cuvier in 1828 and 1830, became perpetual secretary of the Academy of Sciences (1833), professor at the Collège de France (1855), and member of the Academy (1840). He was elected to the Chamber of Deputies in 1838, and made a peer of France, in 1846. Flourens wrote on the development and nutrition of bones, the skin and mucous membranes, the longevity of man, and animal instinct, besides a series of *Éloges Historiques* (1856-62).—His son, Gustave (1838-71), distinguished himself by his book, *La Science de l'Homme* (1865), as an ardent republican he took part in the Cretan insurrection against the Turks (1866), and fell fighting for the Paris Commune.

FLOWER, SIR WILLIAM HENRY (1831-99). Zoologist; born at Stratford-on-Avon; served as assistant-surgeon in the Crimea, and became demonstrator of anatomy at the Middlesex Hospital. He was appointed in 1861 conservator of the Hunterian Museum; in 1869 Hunterian professor of comparative anatomy and physiology, and in 1884 natural history director at the British Museum. He has written on anatomy, zoology, anthropology, the osteology of mammalia, etc. In 1892 he was created a K.C.B.

FLUCKIGER, FRIEDRICH AUGUST (1828-94). German pharmacognosticist; born in Langenthal, Switzerland. He was educated at Berlin, Bonn, Geneva, and Heidelberg, became president of the Swiss Association of Apothecaries in 1857, and in 1881 was member of the committee appointed to revise the pharmacopœia of the German empire. He wrote, in conjunction with Hamburg, *Pharmacography: A History of the Principal Drugs of Vegetable Origin met with in Great Britain, and British India* (1879), and other works in German and French on the nature and history of drugs.

FLUDD, ROBERT (1574-1637). Physician and mystic; born at Milgate House, near Maidstone; studied at Oxford, traveled on the Continent, there studied Paracelsus, and settled as a physician at London. Fludd wrote sixteen works defending Rosicrucianism and expounding a pantheistic theosophy of his own.

FLOYER, SIR JOHN (1649-1734). Physician and author; born at Hintors, in Staffordshire, and was educated at Oxford. He practised in Lichfield, and it was by his advice

that Doctor Johnson, when a child, was taken by his mother to be touched by Queen Anne for the king's evil, March 30, 1714. Doctor Johnson had a high opinion of his learning and piety. Floyer died February 1.

FORBES, SIR JOHN (1787-1861). Physician; born at Cattlebrae, Banffshire, studied at Aberdeen and Edinburgh; in 1807 became a naval surgeon; and after practising at Penzance and Chichester from 1840 made a large practise in London. He was knighted in 1853. Joint-editor of the *Cyclopædia of Practical Medicine* (1832-35); in 1836 he founded the *British and Foreign Medical Review*. He promoted the use of the stethoscope and greatly developed physical diagnosis.

FOSTER, ISAAC (1740-81). An American physician and surgeon; born in Charlestown, Mass. He graduated at Harvard in 1758, studied medicine in Paris and London, and returned to practise at Charlestown. He was a delegate to the first Provincial Congress of Massachusetts in October, 1774, and on the outbreak of the Revolution he gave up his large practise and joined the Continental Army as a volunteer surgeon. In the fall of 1775 he was appointed by Washington acting director-general of the military hospital service of the American forces. He remained in the service after the appointment of Dr. John Morgan, to that position by Congress; was personally attached to Washington's headquarters, and in 1777, was surgeon-in-chief of the Eastern Department of the Continental armies. He resigned in 1780 on account of failing health.

FOURCROY, ANTOINE FRANÇOIS DE (1755-1809). French chemist; born in Paris, June 15; died December 16. Having adopted the profession of medicine he applied himself closely to the study of the sciences connected with it, especially to chemistry, and published in 1776 a translation of Ramazzini's *Treatise on the Diseases of Artisans*. He was professor of chemistry at the Jardin du Roi, 1780-1805. He organized the central school of public works, out of which the polytechnic school afterward sprang, and co-operated in the establishment of the normal schools. In 1799 Bonaparte gave him a place in the council of state, in which place he drew up a plan for a system of public instruction, which, with some alterations, was adopted. His works are numerous, among which the following are the most important: *Leçons Élémentaires d'Histoire naturelle et de Chimie* (1791); *Système des Connaissances chimiques, et de leurs Applications aux Phénomènes de la Nature et de l'Art* (1805); *Philosophie chimique*; *Tableaux synoptiques de*

Chimie (1805); and *La Médecine éclairée par les Sciences physiques*.

FRACASTORO, GIROLAMO (1483-1553). Physician and poet; born at Verona; professor of Logic at Padua, practised successfully as a physician, but ultimately abandoned medicine for letters. His best known work is a Latin poem on syphilis (1530; Lond. 1720); he also published a discourse on sympathy and antipathy.

FRANCIS, JOHN WAKEFIELD (1789-1861). An American physician and medical writer; born in New York City, November 17; apprenticed to a printer; graduated at Columbia College in 1809; graduated in medicine at the College of Physicians and Surgeons in 1811; was associated with Dr. Hosack in editing the *American Medical and Philosophical Register*, a quarterly which had an existence of four years. He was professor of materia medica in the College of Physicians and Surgeons; then in Columbia College; and continued professor when these two institutions were united. In 1816 he went to Europe. On his return he resumed his professional duties at Columbia and then at Rutgers College, an institution formed by the professors of Columbia, who had resigned in a body. Rutgers College was continued until 1830, when it was closed by the legislature. His services were much sought after in all medical, literary and typographical societies. His published works include a wide range of subjects. Among them are *Notice of Thomas Eddy*; *The Anatomy of Drunkenness*; and *Old New York; or, Reminiscences of the Past Sixty Years* (1857, enlarged with a memoir, 1855). He died in New York City, February 8.

FRANK, JOHANN PETER (1745-1821). A German physician; noted especially for his contributions to sanitary science; born at Rothalben, Baden, March 19; died at Vienna, April 24. He became professor at Göttingen in 1784, at Pavia in 1785, and at Wilna in 1804, and was physician to the Emperor Alexander of Russia, 1805-08. He wrote *System einer vollständigen medicinischen Polizei* (1784-1827), *De curandis hominum morbis* (1792-1800), etc.

FRANK, JOSEPH (1771-1842). A German physician; son of J. P. Frank; a supporter of the Brownian system; born at Rastatt, Baden, December 23; died at Como, Italy, December 18. He published *Grundriss der Pathologie* (1803), etc.

FREIND, JOHN (1675-1728). English physician; born at Croton, in Northamptonshire. In 1722 he entered parliament as member for Launceston, in Cornwall; but, being suspected of favoring the cause of the exiled Stuarts, he

spent half of that year in the Tower. During his imprisonment he conceived the plan of his most important and valuable work, *The History of Physic*, of which the first part appeared in 1725, and the second in the following year. In the latter year he was appointed physician to Queen Caroline, an office which he held till his death, July 26.

FREMY, EDMOND (1814-94). A French chemist; born in Versailles. He became professor of chemistry at the Polytechnic School, Paris, in 1846. In 1864 he founded, with Chevreul, a free laboratory at the Museum of Natural Sciences, of which institution he became director in 1879. His researches extended to almost every branch of chemistry. In addition to numerous treatises in the *Annales de Chimie et de Physique*, he published *Traité de chimie générale* (7 vols., 3d ed. 1862-65). The *Encyclopédie Chimique*, a work in 10 vols., upon which he was engaged for thirteen years, was prepared by him in collaboration with several distinguished scientists, and was completed in 1894.

FRERICHS, FRIEDRICH THEODOR von (1819-85). German physician; born at Aurich, and educated at Göttingen and Berlin. After holding a professorship at Kiel and conducting the clinical institute and hospital in that city, he was for eight years professor of pathology and therapy at Breslau (1851-59), whence he was called to Berlin in 1859, where he became permanently established. He was considered one of the leading medical authorities in the German capital, and as physician on the general medical staff of the Prussian Army, rendered particularly valuable services during the Franco-Prussian War. His principal work is the *Klinik der Leiberkrankheiten* (2d ed., 1861); English translation, 1860, under the title *A Clinical Treatise on the Diseases of the Liver*; (also translated into French and Italian).

FREY, HEINRICH (1822-1890). German anatomist and zoologist; born in Frankfort-on-the-Main, June 15; died at Zürich January 17. He began his studies at Bonn in 1840, and continued them up to 1845 at Berlin and Göttingen, when he took the degree of Doctor in Medicine and at the last named university became assistant professor of physiology. In 1848 he was appointed professor of histology and comparative anatomy at Zürich. He was considered one of the finest microlepidopterologists of Germany. The range of his published works is wide. He wrote a *Text-book of Zootomy* (1847); *An Introduction to the Study of Invertebrates* (1847); several works on histology, a book on the

microscope, and an elaborate account of the lepidoptera of Switzerland.

FRIEDEL, CHARLES (1832-99). French chemist; born at Strasburg. He studied under Pasteur in his native town and continued his scientific education at Paris, entering the laboratory of Wurtz. In 1869 he was graduated with two remarkable theses, and in 1876 became professor of mineralogy in the Sorbonne. He eventually succeeded Wurtz (1884), as professor of organic chemistry and director of the research laboratory in the Sorbonne, a position he maintained till his death. His researches are recorded by him in 254 original memoirs and entitle him to a place among the foremost scientific men of the Nineteenth century. His name is especially connected in association with James Mason Crafts with the synthetic method known as the "Friedel and Crafts reaction." He published, in addition to text-books on mineralogy and crystallography, *Cours de Chimie Organique Professé a la Faculté des Sciences de Paris* (1887).

FRIEDREICH, NIKOLAUS (1825-82). A German physician; born at Würzburg, and educated in that city and at Heidelberg. In 1857 he was appointed professor of pathology in the University of Würzburg, and director of the Anatomical Institute. From 1858 until his death he held the chair of pathology and therapeutics at Heidelberg, and was clinical director there. In addition to *Die Krankheiten der Nasenhöhlen, des Larynx und der Trachea*, in Virchow's *Handbuch der speciellen Pathologie* (1854), he published a valuable work on cardiac diseases, entitled *Die Krankheiten des Herzens* (2d ed., 1867).

FRORIEP, ROBERT (1804-61). A German physician; born at Jena, and educated at Bonn. In 1833 he received a call to the Pathological Museum of the Charité at Berlin, of which he was director for nearly thirteen years. His medical and surgical atlases are widely known. They include: *Chirurgische Kupfertafeln* (96 parts, 1820-47); *Klinische Kupfertafeln* (12 parts, 1828-37); *Atlas der Hautkrankheiten* (1837); *Pferderassen* (6th ed., 1874); and *Atlas Anatomicus* (6th ed., 1877). His treatise *On the Therapeutic Application of Electro-Magnetism in the Treatment of Rheumatic and Paralytic Affections* (English translation by R. M. Lawrence, 1850) was a very important contribution in its day to electro-therapy.

FUCHS, KONRAD HEINRICH (1803-55). A German physician; born at Bamberg, Bavaria, December 7; died at Göttingen, Prussia, December 2. Professor of pathology

at Göttingen 1838-55. He wrote *Die krankhaften Veränderungen der Haut* (1840-41); *Lehrbuch der speziellen Nosologie und Therapie* (1845-48), etc.

FUCHS, LEONHARD (1501-1566). A German physician and botanist; author of *De historia stirpium* (1542), etc.; born at Wemdingen, Bavaria, January 17; died at Tübingen, Württemberg, May 10.

G

GADOLIN, JOHN (1760-1852). Finnish chemist; born in Abo, Finland, June 5; died in Wirmo, Finland, August 15. He studied chemistry under Bergman and in 1797 was appointed professor of chemistry in Abo—an office which he held till 1822. He devoted himself to investigations on mineral and metallurgic subjects. But the research for which he is especially remembered was upon a black mineral found in the porcelain feldspar quarry at Ytterby, near Stockholm, by Arhenius, of which an account had been published in 1788. In 1794 he read a paper upon it, to the Academy of Sciences and showed that it contained a new kind of earth. This discovery was subsequently confirmed by Ekeberg, who called the earth *yttria*, and the mineral *Gadolinite*, after its first investigator. The *yttria* was afterward shown to be a mixture of several earths.

GAILLARD, EDWIN SAMUEL (1827-85). American physician; born in Charleston, S. C., graduated at the University of South Carolina in 1845, and at the State Medical College in 1854. During the Civil War he served in the Confederate Army, holding various positions in the medical department, and subsequently was editor, successively, of the *Richmond and Louisville Medical Journal* and of the *American Medical Weekly*.

GAIRDNER, WILLIAM (1793-1867). A Scotch physician; born at Mount Charles, Ayrshire, graduated at the University of Edinburgh in 1813, and in 1822 settled in London, where he practised his profession almost continuously, until his death. He published an *Essay on the Effects of Iodine on the Human Constitution* (1834), and an excellent treatise *On Gout; Its History, Its Causes, and Its Cure* (1849).

GALEN, or CLAUDIUS GALENUS (about 130-201). Greek physician; born at Pergamus in Mysia, and studied medicine there and at Smyrna, Corinth, and Alexandria. After 164 he spent four years in Rome, and in 170 was recalled thither by the Emperor M. Aurelius. He afterwards attended Commodus, Sextus, and Severus. He is supposed

to have died in Sicily. Galen was a voluminous writer on medical and philosophical subjects. The works extant over his name consist of 83 genuine treatises; 19 doubtfully genuine; 45 undoubtedly spurious; 19 fragments; and 15 commentaries on Hippocrates. He was a careful dissector (of animals), a somewhat too theoretical physiologist, and so gathered up all the medical knowledge of his time as to become the authority from whom the subsequent Greek and Roman medical writers were mere compilers. He was the first to diagnose by the pulse. See edition by Kuhn (20 vols. 1821-33), that of the smaller works by Marquardt (1884-94); the French translation by Daremberg (1857); and Coxe's epitome (Phila. 1846).

GALL, FRANZ JOSEPH (1758-1828). The founder of phrenology; born at Tiefenbronn near Pforzheim, March 9, and settled in Vienna in 1785 as a physician. In 1796 he began to lecture on phrenology; but the course was prohibited in 1802 as subversive of religion. With Spurzheim he next lectured through Germany, Holland, Sweden, and Switzerland, and reached the height of his fame when in 1807 he settled as a physician in Paris. In 1808 he and Spurzheim presented to the French Institute a memoir of their discoveries, on which a committee reported unfavorably. Thereupon Gall and Spurzheim published their *Introduction au Cours de Physiologie du Cerveau*, followed by *Recherches sur le Système Nerveux* (1809), and by *Anatomie et Physiologie du Système Nerveux* (1810-19). Gall died at Montrouge near Paris, August 22d.

GALVANI, LUIGI (1737-98). Owes his celebrity to his discoveries in animal electricity, expounded in *De viribus Electricitatis in Motu Musculari Commentarius* (1791). His works were published by the Academy of Sciences of Bologna (1841-42). He was born at Bologna, studied there, and in 1762 became professor of Anatomy.

GANNAL, JEAN NICOLAS (1791-1852). A distinguished French technical chemist; born at Sarre-Louis, July 23. He was the first to introduce into printing the use of elastic rollers, which he formed by a mixture of gelatine and sugar; and his process for the melting of tallow, and hardening it with acids, prepared the way for the manufacture of wax-candles. In 1823 he took out a patent for the making of glue and gelatine. He obtained one of the Monthyon prizes of the Institute in 1827 for the employment of chlorine in the treatment of catarrh and phthisis, and again, in 1835, for his discovery of the efficacy of the injections of solutions of acetate and chloride of aluminium in preserving anatom-

ical preparations. Turning his attention next to embalming, he showed that it could be accomplished without mutilation of the body, and with greater economy than after the old methods, by injecting into one of the carotid arteries solutions of aluminium salts. Gannal died at Paris.

GARDEN, ALEXANDER (1730-91). Scottish scientist; born in Charleston, S. C., died in London, April 15. He was graduated from Aberdeen; became a professor in King's College, New York (now Columbia University), and in 1755 established himself in medical practise at Charleston. From 1783 he was in London, where he became vice-president of the Royal Society. The botanical genus *Gardenia* was named in his honor by Linnæus. He wrote various papers on topics of botany and zoology.

GARDINER, SYLVESTER (1707-86). An American physician; born in South Kingston, R. I., studied medicine in Paris and London, and began practise in Boston. He was instrumental in colonizing that part of the "Plymouth Purchase" lying along the Kennebec river, and in settling the town of Pittston, Maine, from which the present city of Gardiner, named in his honor, was subsequently set off. He established a church and library there, and was one of the founders of King's Chapel, in Boston. On the outbreak of the Revolutionary War he joined the Loyalist element in Boston, and in 1776 removed to Halifax, N. S., whence he subsequently removed to England, his name having meanwhile been included in the proscription and banishment act of 1778. In 1785 he returned to this country, and settled at Newport, where he died.

GARTH, SIR SAMUEL (1661-1719). Physician and poet; born at Bowland Forest, Yorkshire, studied at Peterhouse, Cambridge, and Leyden, graduated M.D. in 1691, and next year settled in London. In 1700 he did himself everlasting honor by providing burial in Westminster Abbey for the neglected Dryden. He was knighted by George I and appointed physician in ordinary, and physician-general to the army. He died January 18. He wrote *The Dispensary* (1699), a satire on the apothecaries and physicians who opposed giving medicine gratuitously to the sick poor, and *Claremont* (1715), a topographical poem.

GATLING, RICHARD JORDAN (1818-1903). Born in Hertford county, N. C., September 12; studied medicine but never practised, and is known for various inventions, especially the Gatling gun (1861-62), a revolving battery gun, with ten parallel barrels, firing 1,200 shots a minute.

GAY-LUSSAC, JOSEPH LOUIS (1778-1850). Chemist and

physicist; was born December 6, at St. Léonard in Haute Vienne. From the Polytechnic School he passed in 1801 to the department of Ponts et Chaussées, and began a series of researches on vapor, temperature, and terrestrial magnetism. In 1808 he made the important discovery of the *law of volumes*; in 1809 became professor of chemistry at the Polytechnic, and from 1832 in the Jardin des Plantes. He was the first to form synthetically the hydriodic and iodic acids; and in 1815 he succeeded in isolating cyanogen. His investigations on sulphuric acid, the manufacture of the bleaching chlorides, the centesimal alcoholometer, and the assaying of silver are also important. In 1818 he became superintendent of the government manufactory of gunpowder, and in 1829 chief assayer to the mint. In 1839 he was made a peer of France. He died May 9. His works include *L'Analyse de l'Air Atmosphérique* (1804), *Cours de Physique* (1827), and *Leçons de Chimie* (1828).

GEBER (?-776). Probably identical with Abu Musa Jabir ben Haijan. An Arabian alchemist. He occupies a position in the history of chemistry analogous to that held by Hippocrates in that of medicine. The theory that the metals are composed of the same elements, and that by proper treatment the base metals can be developed into the noble, which was the leading theory in chemistry down to the 16th century, is clearly defined in his writings. The titles of 500 works reputed to be from his pen are known, of which the following have appeared in print: *Summa perfectionis*, *Liber investigationis*, or *De investigatione perfectionis*, *De inventione veritatis*, *Liber Fornacum*, and *Testamentum*.

GEISLER, HEINRICH (1814-79). Inventor of chemical apparatus; settled at Bonn, Prussia, in 1854.

GEITNER, ERNST AUGUST (1783-1852). A German chemist, born at Gera. After conducting a chemical factory at Lössnitz, he founded another at Schneeberg, in 1815, which he conducted until his death. He was eminent as a chemical investigator, and was the discoverer of the alloy *argentan*, or German silver. He also devoted considerable attention to the chemistry of dyeing, and was the first to utilize chromic salts for animal and vegetable dyes. He published: *Briefe über die Chemie*; *Die Familie West, oder Unterhaltungen über Chemie und Technologie*; and several important writings on the scientific preparation of grape-sugar and grape-syrup from potato-flour.

GENTH, FREDERICK AUGUSTUS (1820-93). An American analytical chemist and mineralogist; born at Wächtersbach,

Hesse. He was educated at Heidelberg, at Giessen under Liebig, and at Marburg under Gerling in physics, and in chemistry under Bunsen, whose assistant he was from 1845 to 1848, when he went to Philadelphia and set up an analytical laboratory. In 1872 he was appointed to the chair of chemistry in the University of Pennsylvania, but resigned in 1888, and again opened his laboratory. He established twenty-three new minerals; wrote one hundred and two articles, mostly on chemistry and mineralogy; and was best known for his *Researches on the Ammonia-Cobalt Bases*, with Wolcott Gibbs (1856); for his studies of "Corundum" (in *American Philosophical Society Proceedings*, 1873); for his reports, as chemist and mineralogist to the Geological Survey of Pennsylvania, on the mineralogy of the State; and for his analyses for the State Board of Agriculture. He was a member of the American Philosophical Society (1854-93), one of the founders of the American Chemical Society, and its president in 1880, a member of the National Academy of Sciences and a fellow of the Boston Academy of Arts and Sciences.

GERHARDT, KARL FRIEDERICK (1816-56). Chemist; born at Strasburg, studied chemistry at Leipzig and Giessen, and in 1838 settled in Paris. Between 1849 and 1855 he published his views of series and the theory of types with which his name is associated. In 1855 he became professor of Chemistry at Strasburg. All his ideas and his discoveries are embodied in his *Traité de Chimie Organique* (1853-56).

GIBBONS, WILLIAM (1781-1845). An American physician and writer; born in Philadelphia, Pa., August 10; father of James Sloan Gibbons. He graduated at the University of Pennsylvania in 1805, and practised in Wilmington, Delaware, until his death. He was a "Friend," and devoted much of his time to the interests of the society. He published *Exposition of Modern Scepticism*, a pamphlet, and several articles, under the name "Vindex." He died in Wilmington, Del., July 25.

GIBSON, WILLIAM (1788-1868). An American surgeon; born in Baltimore, Md. After graduating at Princeton in 1806, he studied in Scotland, at the University of Edinburgh. He practised his profession in Baltimore until seventy years of age, when he retired to Newport, R. I. He was professor of surgery in the University of Pennsylvania from 1819 to 1849. He published *Principles and Practice of Surgery* (1824); *Rambles in Europe* (1839); and *Eminent*

Belgian Surgeons and Physicians (1841). He died in Savannah, Georgia, March 2.

GILBERT, RUFUS HENRY (1832-1885). American inventor; born at Guilford, N. Y., January 26; died in New York, July 10. He was graduated at the New York College of Physicians and Surgeons; served as surgeon in the Union army in the Civil War; and was appointed superintendent and medical director of the United States army hospitals. Owing to failure of his health after the war, he abandoned his profession and engaged in the railroad business, making a special study of the needs of rapid transit in New York. The result was the erection of the first elevated railroad in that city, the motive power being an endless wire cable. From this beginning the elevated system of to-day was gradually developed.

GILBERT, WILLIAM (1540-1603). Born at Colchester; was elected in 1561 a fellow of St. John's College, Cambridge, and in 1573 settled in London as a physician, becoming court physician to Elizabeth, and president of the College of Physicians. His leisure was given to magnetism and chemistry. In his *De Magnete* (1600) he established the magnetic nature of the earth; and he conjectured that terrestrial magnetism and electricity were two allied emanations of a single force. He was the first to use the terms "electricity," "electric force," and "electric attraction," and to point out that amber is not the only substance which when rubbed attracts light objects; and he describes how to measure the excited electricity by means of an iron needle moving freely on a point. He also invented instruments for finding latitude. His *De Mundo nostro Philosophia Nova* was published in 1651. See *Memoir* prefixed to P. Fleury Mottelay's translation of the *De Magnete* (1893).

GILCHRIST, JOHN BORTHWICK (1759-1841). An East India Company surgeon, an early student and teacher of Hindustani, was born at Edinburgh; lived at Calcutta, 1783-1804; and died in Paris.

GILMAN, CHANDLER ROBBINS (1802-65). An American physician. He was born in Marietta, Ohio, graduated at the University of Pennsylvania in 1824, and from 1841 until his death was professor of obstetrics and diseases of women and children in the College of Physicians and Surgeons, where, after 1851, he also filled the chair of medical jurisprudence. He published: *Life on the Lakes* (1835); *Sketch of the Life and Character of Dr. J. B. Beck* (1851); and *The Relations of the Medical to the Legal Profession* (1856).

- GLAUBER, JOHANN RUDOLPH** (about 1603-68). Alchemist and physician; born at Karlstadt in Franconia, died in Amsterdam. In 1648 he discovered hydrochloric acid; he was probably the first to procure nitric acid; and his name lives in Glauber's Salt, a neutral sulphate of soda discovered by him. His treatises were translated by Christopher Packe (1689).
- GLISSON, FRANCIS** (1597-1677). An English physiologist, born at Rampisham, Dorsetshire, and educated at Cambridge and Oxford. He became professor of physics at the former university in 1636, and retained that position until his death. In 1639 he also received an appointment as lecturer on anatomy in all its branches at the College of Physicians, London, in which he was president from 1667 to 1669. He was one of the founders of the Royal Society, and was distinguished alike as an investigator, lecturer, and author. Especially noteworthy were his investigations on the morbid anatomy of rickets, as treated in his famous work entitled *De Rachitide sive morbo puerili qui vulgo The Rickets dicitur, Tractatus* (1650), frequently reprinted and translated into English. His work on the liver and its diseases, entitled *Anatomia Hepatis* (1654), is also important, the term "Glisson's capsule," now a part of medical phraseology, perpetuating the name of its author.
- GMELIN, JOHANN GEORG** (1709-55). Professor of chemistry and botany at St. Petersburg and Tübingen, in 1733-43 he travelled in Siberia, and wrote *Flora Sibirica* (1748-49), and *Reisen durch Sibirien* (1751-52). His nephew, Samuel Gottlieb (1744-74), became professor of Botany at St. Petersburg (1767), and wrote *Historia Fucorum* (1768). Another nephew, Johann Friedrich (1748-1804), wrote *Onomatologia Botanica* (1771-77).
- GMELIN, LEOPOLD** (1788-1853). Born at Göttingen, from 1817 to 1850 was professor of Medicine and Chemistry at Heidelberg. His greatest work is his *Handbuch der Chemie* (1817-19; English translation by Watts, enlarged 1848-49).
- GODMAN, JOHN D.** (1794-1830). American naturalist and medical writer; born at Annapolis, Md., died in Germantown, Pa., April 17. In 1813 he entered as a sailor in the flotilla then stationed in Chesapeake Bay, but in 1815 left the service, and commenced the study of medicine. After lecturing for some time at Baltimore in the room of the professor of anatomy in the University of Maryland, and holding a chair of anatomy for a short time at Cincinnati, he settled in Philadelphia as a physician and private teacher of anatomy. His chief work is his *American Natural His-*

tory (1828). He also wrote: *Anatomical Investigations; Account of some Irregularities of Structure and Morbid Anatomy; Rambles of a Naturalist; etc.*

GOERCKE, JOHANN (1750-1822). A German physician; born at Sorquitten, East Prussia. He entered the Prussian Army as a surgeon at the age of seventeen, and in 1789 was appointed one of the three chief surgeons in the army. Meanwhile he had travelled extensively in Austria, Italy, France, and in England, where he entered into friendly relations with John and William Hunter, Bell, Cooper, Hamilton, and other equally celebrated surgeons. In 1797 he was appointed chief surgeon to the Prussian Army, in which capacity he rendered invaluable services during the various campaigns terminating with the battle of Waterloo. He founded several educational institutions for military surgeons, the most important of which was the celebrated *Pepinière*, afterwards known as the *Medicinisch-Chirurgisches Friedrich-Wilhelms Institut*. His literary works include: *Pharmacopœia Castrensis Borussia* (1805); and *Beschreibung der bei der königlich-preussischen Armee Stattfindenden Krankentransportmittel* (1814).

GOOD, JOHN MASON (1764-1827). Born at Epping, studied medicine in London, and from 1793 combined the practise of medicine with the most miscellaneous literary activity. His writings embrace poems, translations of Job, the Song of Songs, and Lucretius, essays on poisons, and history of medicine. He helped Dr. Olinthus Gregory to produce an encyclopædia (1813).

GOODSIR, JOHN (1814-67). Anatomist; born at Anstruther, studied at St. Andrews, and was apprenticed to a dentist in Edinburgh, attending the medical classes there the while. In 1846 he became professor of Anatomy at Edinburgh. See *Memoir* by Prof. Turner (1868).

GORUP-BESANEZ, BARON EUGEN (1817-78). A German chemist; born at Gratz, and educated in that city and at Vienna, Padua, Munich, and Göttingen. He was appointed professor of chemistry at Erlangen in 1849. His researches on zöochemical analysis are important; and his work entitled *Anleitung zur qualitativen und quantitativen zöochemischen Analyse* (3d ed. 1871) is very valuable. His principal publication is the *Lehrbuch der Chemie* (vol. i., 7th ed. 1885; vol. ii., 6th ed. 1881; vol. iii., 4th ed. 1878), which has been translated into French and several other languages.

GOULD, AUGUSTUS ADDISON (1805-66). American conchologist; was born at New Ipswich, N. H., April 23,

graduated at Harvard College in 1825, and took his degree of doctor of medicine in 1830. Establishing himself in Boston, he devoted himself to the practise of medicine, and finally rose to high professional rank and social position. He became president of the Massachusetts Medical Society, and was employed as an authority in editing the vital statistics of the State. As a conchologist his reputation is world-wide. He was a pioneer of the science in America. His writings fill many pages of the publications of the Boston Society of Natural History and other periodicals. The two most important monuments to his scientific work, however, are *The Mollusks and Shells of the United States* exploring expedition under Commodore Wilkes, published by the government, and the *Report on the Invertebrata*, published in 1841. The author's death took place at Boston, September 18.

GRAAF, REGNIER DE (1641-73). Dutch physician and anatomist; born at Schoonhoven, and practised at Delft. In 1663 he wrote a famous treatise on the pancreatic juice, in 1672 discovered the *Graafian* vesicles of the female ovum.

GRAEFE, ALFRED KARL (1830-99). A German physician; cousin of Albrecht von Graefe. He was born at Martinskirchen, studied medicine in various German universities and in Paris, acted as an assistant to Albrecht von Graefe in Berlin from 1854 to 1858, and afterwards was professor of diseases of the eye at Halle, which position, however, he resigned in 1892. He founded at Halle an ophthalmic hospital which attracted many thousands of patients, and devised a method of operating whereby, without injury to the eye, parasites deeply lodged in that organ could be removed. He wrote a number of papers on ophthalmology, and published, in conjunction with Sämisch, *Handbuch der gesamten Augenheilkunde* (1874-80).

GRAFE, CARL FERDINAND von (1787-1840). German surgeon; was born at Warsaw March 8. He studied medicine at Halle and Leipsic, and after obtaining license from the latter university, he was in 1807 appointed private physician to Duke Alexius of Anhalt-Bernburg. In 1811 he became professor of surgery at Berlin, and during the war with Napoleon he was superintendent of the military hospitals. When peace was concluded in 1815, he resumed his professional duties. He was also appointed to the medical staff of the army, and he became a director of the Frederick-William Institute, and of the Medico-Chirurgical Academy. He died suddenly, July 4, at Hanover, whither

he had been called to operate on the eyes of the crown prince.

GRAHAM, THOMAS (1805-69). Scottish chemist; born at Glasgow, Dec. 21; died in London, Sept. 16. He was educated at the University of Glasgow, and in 1828 communicated to the Royal Society of Edinburgh the results of experiments on the absorption of vapors by liquids. In 1831 he laid before the Royal Society of Edinburgh the result of a series of experiments on ten different gases, from which he arrived at the conclusion that gases tend to diffuse inversely as the square root of their specific gravities, a conclusion which has been received as the law of the diffusion of gases. In 1837 he was elected professor of chemistry in the University of London, and soon afterward was appointed assayer to the mint. In 1840 he received the gold medal of the Royal Society, and the next year was chosen first president of the Chemical Society, which he had assisted in founding. He now began to be employed as consulting chemist in various mercantile and public undertakings, and it was by his recommendation that wood-spirit, or methylic alcohol, was used to render spirits sold free of duty for trade or scientific purposes unfit for consumption as a beverage. In 1846 he assisted in founding the Cavendish Society, of which he was elected president, an office he retained till the close of his life. At the same time he was engaged in investigations on the diffusion of liquids, and was the earliest to fully develop that theory. He made many other important discoveries, and was the author of *Elements of Chemistry* (1837) and various professional papers.

GRAINGER, JAMES (about 1721-66). Physician and poet-aster; was born at Duns, and in 1759 married and settled in St. Kitts, West Indies.

GRAVES, ROBERT JAMES (1796-1853). Physician, took his M.B. at Dublin in 1818, and after three years of study and travel in Edinburgh and on the Continent settled (1821) in Dublin, and in 1827 became professor in the College of Physicians, of which he was president in 1843-44. He was elected F.R.S. in 1849. He published *A System of Clinical Medicine* (1843) and *Clinical Lectures* (1848). See *Life* by Stokes, prefixed to *Studies in Physiology and Medicine* (1863).

GRAY, ASA (1810-88). Born at Paris, N. Y., November 18, took his M.D. in 1831, but relinquished medicine for botany, and in 1842-73 was professor of Natural History at Harvard, becoming meanwhile a strong Darwinian. In

1838-42 he published, with Dr. Torrey, the *Flora of North America*; in 1848-50 *Genera Floræ America Boreali-Orientalis Illustrata*; other works being *A Free Examination of Darwin's Treatise* (1861), *Darwinia* (1876), and *Natural Science and Religion* (1880). He died at New Cambridge, January 30. His *Scientific Papers* were edited in 1889, and his *Letters* in 1893.

GRAY, JOHN PURDUE (1825-86). American alienist; born at Half Moon, Pa., died in Utica, N. Y., November 29. He was graduated from Dickinson College in 1846 and took a medical degree at the University of Pennsylvania in 1848. He was successively assistant physician and medical superintendent of the New York State Asylum at Utica. He introduced many improvements into the treatment of the insane, and was for many years editor of the *American Journal of Insanity*.

GREENHOW, ROBERT (1800-54). An American physician and historian; born in Richmond, Va. He was educated at William and Mary College, and afterwards in New York. He lectured upon historical subjects, was an apt linguist, and published a *History of Tripoli* (1835), but his chief work was a *History of Oregon and California* (1846).

GREGORY, JAMES (1753-1821) the compounder of "Gregory's Mixture;" born at Aberdeen, became in 1776 professor of Medicine at Edinburgh, and a leading doctor. He was the author of *Conspectus Medicinæ Theoreticæ and Philosophicæ and Literary Essays* (1792).

GREGORY, JOHN (1724-73). Grandson of James Gregory, was born at Aberdeen, became professor of Medicine at Aberdeen in 1755, and in 1766 at Edinburgh. Among his works are a *Practise of Physic* (1772) and *Comparison of Man with the Animals* (1765).

GREGORY, WILLIAM (1803-58). Professor of Chemistry at Glasgow (1837), in King's College, Aberdeen (1839), and at Edinburgh (1844), wrote *Outlines of Chemistry* (1845).

GREW, NEHEMIAH (1628-1711). Author of the *Anatomy of Plants*, was born at Atherstone, son of the Puritan, Obadiah Grew, D.D. (1607-89), and practised at Coventry and in London.

GROSS, SAMUEL DAVID (1805-84). Surgeon; born near Easton, Pa., in 1835, became professor of Pathology at Cincinnati, afterwards professor of Surgery at Louisville and New York, and in 1856-82 in Jefferson College. He published a *System of Surgery* (1859; 6th ed. 1882), etc.

GUDDEN, BERNHARD von (1824-86). A German physician; born at Cleves, and educated at Bonn, Berlin, and Halle. He specialized in the care of the insane; became assistant physician at the asylums in Siegburg and Illenau; then director of an establishment near Würzburg, and in 1869 professor of psychiatry at Zurich. From this position he went in 1872 to a like chair at Munich, where he also had charge of the mad King Louis II., with whom he died (1886) in the attempt to keep him from suicide by drowning in the Starnbergersee. His works include: *Beiträge zur Lehre von der Scabies* (2d ed. 1863); *Experiment-untersuchungen über Schädelwachstum* (1874); and the posthumous papers collected by Grashey (1889); with Westphal he edited *Archiv für Psychiatrie und Nervenkrankheiten* (1868 et seq.).

GUILLOTIN, JOSEPH IGNACE (1738-1814). A French physician, born at Saintes. He was a brilliant student, and after obtaining his education in a Jesuit college he entered the Order as a novitiate, and for several years was a teacher in their college at Bordeaux. Afterwards he removed to Paris, where he practised medicine with such success as to win recognition as one of the foremost physicians of the day. He took a prominent part in the early revolutionary movement, and his suggestion that some kind of decapitating machine be used in inflicting the death penalty, forever connected his name with the most terrible events of the French Revolution. He was secretary of the National Assembly in 1790, after which he retired and took no part in the Reign of Terror, during the latter part of which, indeed, he was himself a prisoner and in constant danger of being guillotined. After the rise of Napoleon he resumed his practise in Paris, where he was one of the earliest and most earnest champions of vaccination.

GULL, SIR WILLIAM WITHEY (1816-90). Physician; born December 31, at Colchester, studied at Guy's Hospital, and graduated M.D. at London University in 1841. In 1847-49 he was professor of Physiology at the Royal Institution, and in 1856-65 physician and lecturer at Guy's. For his treatment of the Prince of Wales in 1871 he received a baronetcy and was appointed physician to the Queen. He died January 29, 1890. Dr. Acland edited his writings on cholera, paralysis, alcohol, etc. (New Sydenham Soc. 1893 et seq.).

GUNTHER, ANDERNACH JOHANN von (1487-1574). A German physician, born in Andernach, Prussia. He was educated at Utrecht and Marburg, became professor of Greek

at Louvain, and subsequently took his doctorate in medicine at Paris. There he became physician to Francis I. Obligated, as a Protestant, to flee the city, he established himself at Strasburg, where he achieved distinction as a physician and anatomist. His published works include *Anatomicarum Institutionum Libri Quattuor* (1536).

GUTHRIE, GEORGE JAMES (1785-1856). An English surgeon; born in London of Scottish parents. He was admitted to membership in the Royal College of Surgeons in 1801. As army surgeon he served in the Peninsular campaign, and his work there won the praise of the Duke of Wellington. In 1816 he began a series of lectures on surgery to the officers of the army and navy, which he continued for nearly thirty years. His principal works are: *On Gunshot Wounds of the Extremities Requiring Different Operations of Amputation, and Their After Treatment* (6th ed. 1855), and his *Lectures on the Operative Surgery of the Eye* (3d ed. 1838).

H

HAGEN, KARL GOTTFRIED (1749-1829). German physician and apothecary; born at Königsberg, Prussia. He was appointed professor of medicine at the University of Königsberg in 1779, and professor of chemistry, physics, and natural history in 1807. His lectures, which he continued until his death, exercised a far-reaching influence. His best-known work is *Lehrbuch der Apothekerkunst* (8th ed. 1829).

HAHNEMANN, CHRISTIAN FRIEDRICH SAMUEL (1755-1843). The founder of homeopathy. He was born at Meissen, April 10, studied at Leipzig and Vienna, passed two years as physician and librarian to a nobleman in Transylvania, and in 1779 graduated at Erlangen. For ten years he practised medicine and held several public appointments; then he settled near Leipzig. Dissatisfied with current German methods of treatment, he translated foreign works (such as Cullen's *Materia Medica*); and after six years of experiments on the curative power of bark, came to the conclusion that medicine produces a very similar condition in healthy persons to that which it relieves in the sick. His denunciation of blood-letting and the other violent modes of treatment, aroused the animosity of physicians, while his own infinitesimal doses of medicine provoked the apothecaries, who refused to dispense them; accordingly he gave his medicines to his patients gratis. For a physician to dispense his own medicine was an infringement

of German law, and he was prosecuted in every town in which he attempted to settle from 1798 until 1810, when he returned to Leipzig. Two years afterwards he was appointed a *privat-docent* of the university; and there he remained, teaching his system to an ever increasing band of disciples and practising until 1821, when a successful prosecution for dispensing his own medicines drove him out of Leipzig. He retired to Köthen, and in 1835 removed to Paris, where he died July 2. His *Friend of Health* (1792), proves him to have been far in advance of his time as to preventive medicine; in 1794 he adopted those principles of non-restraint and kindness in dealing with the insane which later were advocated by Pinel in Paris and Conolly in England. See *Life* by Albrecht (2d ed. 1875).

HAKE, THOMAS GORDON (1809-95). The parable poet; was born at Leeds, and educated at Christ's Hospital, traveled a good deal on the Continent; took his M.D. at Glasgow, and practised at Bury St. Edmunds, Richmond, etc. Among his friends were Burrow, Trelawney, Rossetti, his cousin Gordon Pasha, and Watts-Dunton. He published *Madeline* (1871), *Parables and Tales* (1873), *The Serpent Play* (1883), *New Day Sonnets* (1890), etc. See his *Memoirs of Eighty Years* (1893).

HALFORD, SIR HENRY (1766-1844). A courtly London physician; born at Leicester, who in 1809 changed his name from Vaughan on coming into a large property, and was created a baronet. See *Life* by Munk (1895).

HALL, MARSHALL (1790-1857). Physician and physiologist, was born at Basford, England, February 18. After studying at Edingurgh, Paris, Göttingen, and Berlin, he settled at Nottingham in 1817, and practised in London from 1826 until 1853. He died in Brighton, August 11. He did important work in regard to the reflex action of the spinal system (1833-37); his name is also associated with a standard method of restoring suspended respiration. He wrote on diagnosis (1817), the circulation (1831), *Respiration and Irritability* (1832), etc. See *Memoirs* by his wife (1861).

HALLER, ALBRECHT von (1708-77). Anatomist, botanist, physiologist, and poet; born at Bern, and started practise in 1729, but in 1736 was called to a chair at Göttingen. Here he organized a botanical garden, an anatomical museum and theatre, and an obstetrical school; helped to found the Academy of Sciences; wrote anatomical and physiological works; and took an active part in the literary movement. In 1753 he resigned and returned to Bern,

where he became magistrate. After this he wrote three political romances, and prepared four large works on the bibliography connected with botany, anatomy, surgery and medicine. His poems were descriptive, didactic, and (the best of them) lyrical. See *Lives* and other works by Thomas Henry (1783), Blösch and Hirzel (1877), Frey (1879), Bodemann (1885), Bondi (1891), and Widmann (1893).

HAMILTON, FRANK HASTINGS (1813-1886). An American surgeon; born at Wilmington, Vt., September 10; graduate of Union College, and received his medical degree from the University of Pennsylvania in 1835; was chosen professor of surgery in the Western College of Physicians and Surgeons, Fairfield, N. Y., in 1839; and the next year was called to the medical college in Geneva, N. Y. In 1846 he became professor in the Buffalo Medical College, and in 1859 was elected to fill the chair of principles and practise of surgery in the Long Island College Hospital, where he remained until the war broke out. For two years he served as surgeon in the army, and attained the rank of lieutenant-colonel. From 1868 to 1875 he was professor of surgery in the Bellevue Hospital Medical College, and was surgeon to the hospital from 1863 to his death, and, during President Garfield's last illness, was one of the consulting physicians. Besides numerous contributions to medical journals, Dr. Hamilton wrote *Treatise on Strabismus* (1844); *Treatise on Fractures and Dislocations* (1860); *Practical Treatise on Military Surgery* (1862); and *The Principles and Practise of Surgery* (1872). Died in New York City, August 11.

HAMMOND, WILLIAM ALEXANDER (1828-1900). An American physician; born at Annapolis, Md., August 28. He graduated from the University of New York as medical doctor in 1848, and entered the United States army in 1849 as assistant surgeon, leaving the service in 1860, after which he accepted a professorship of anatomy and physiology in the University of Maryland. At the beginning of the Civil War he again entered the army, and in 1862 was appointed surgeon-general, with the rank of brigadier-general; was dismissed on charge of irregularities in liquor contracts, but this sentence was afterward reversed by the President and Congress and he was restored to his full rank. In 1867 he became a professor in Bellevue Hospital Medical College, and then a member of the faculty of the University of the City of New York, medical department. In 1882 he lectured on diseases of the nervous sys-

tem, in the New York Post-Graduate Medical School. Among his published works are: *Physiological Memoirs* (1863); a *Treatise on Hygiene*, with special reference to the military service (1863); *Sleep and Its Derangements* (1869); *Diseases of the Nervous System* (1871); *Lal* (1884); *A Strong Minded Woman* (1885); *On the Susquehannah* (1887).

HARE, ROBERT (1781-1858). American scientist; born at Philadelphia, January 17; died there May 15. He was professor of chemistry in the University of Pennsylvania 1818-47. He will be longest remembered for his discovery of the oxyhydrogen blowpipe to which he gave the name of "hydrostatic blowpipe," but he also invented the valve-cock, the calorimeter and a process for denarcotizing laudanum. He wrote *Brief View of the Resources of the United States* (1810); *Chemical Apparatus and Manipulations* (1836); *Memoir on the Explosiveness of Nitre*; etc.

HART, ERNEST ABRAHAM (1835-98). An English physician and sanitary reformer; a brilliant pupil of the City of London School; first-prize man in every class during his stay at St. George's Hospital Medical School; ophthalmic surgeon and lecturer at St. Mary's Hospital School; wrote a book on the treatment of aneurism; chosen by the British Medical Association as the editor of their *Journal*; devoted himself to the questions concerning social and sanitary progress, editing the *Sanitary Record* and *London Medical Record*; chairman of the National Health Society and the Smoke Abatement Committee; exposed the defective arrangements for the sick poor in workhouses; urged the measures that culminated in the passage of the Metropolitan Asylums Act in 1867; established societies for the protection of infant life and for cheap concerts for the poor; helped in shaping the Public Health Acts, and in bettering the medical departments of the army and navy; worked strenuously in favor of such measures as would secure the purity of the milk supplied to cities; favored successfully the creation of an Irish peasant proprietary by the reclaiming of waste land—a measure embodied in an act of Parliament.

HARTSHORNE, EDWARD (1818-85). American physician; son of Dr. Joseph Hartshorne; born in Philadelphia, Pa., May 14; graduated from Princeton (1837), and in medicine from the University of Pennsylvania (1840); resident surgeon to the Pennsylvania Hospital (1841); physician to the Eastern Pennsylvania Penitentiary (1843); surgeon in Will's (eye) Hospital (1848), and afterward in the Penn-

sylvania Hospital. During the war he served as consulting-surgeon in the United States army hospitals and as an active member and secretary of the United States Sanitary Commission; wrote *a Separate System*; notes to Taylor's *Medical Jurisprudence* (1854); and *Ophthalmic Medicine and Surgery* (1856). He died June 22.

HARVEY, WILLIAM (1578-1657). The discoverer of the circulation of the blood. He was born at Folkestone, April 1. After six years at King's School, Canterbury, in 1593 he entered Caius College, Cambridge, took his degree in 1597, and after studying at Padua, graduated M.D. both there and at Cambridge in 1602, then settled in London as a physician. In 1609 he was appointed physician to St. Bartholomew's Hospital, and in 1615 Lumleian Lecturer at the College of Physicians. In 1628 he published his celebrated treatise, *Exercitatio Anatomica de Motu Cordis et Sanguinis*, in which is expounded his views of the circulation of the blood. Successively physician to James I. and Charles I., he accompanied the Earl of Arundel in his embassy to the emperor in 1636, and publicly demonstrated his theory at Nuremberg. Harvey was present at the battle of Edgehill in attendance on Charles I. (October 23, 1642); afterward he resided at Oxford, being elected warden of Merton College. On the surrender of Oxford to the Parliament in July, 1646, he returned to London. During the remainder of his life he was usually the guest of one or other of his brothers. His *Exercitationes de Generatione Animalium* appeared in 1651. In 1656 he resigned his Lumleian lectureship, and in taking leave of the college presented to it his little estate at Burwash in Sussex. He died June 3, and was buried at Hempstead near Saffron Walden. In 1883, at the cost of the College of Physicians, his remains were removed from the dilapidated vault to the Harvey Chapel in the same church. Harvey's works in Latin were published in 1766; a translation by Dr. Willis appeared in 1847 (new ed. 1881), and his *Prælectiones Anatomia* in 1887. See Willis's *Life of Harvey* (1878), and Huxley's discourse at the Tercentenary celebration (*Nature*, 1878).

HAVERS, CLOPTON (about 1650-1702). An English anatomist and physician. He studied at Cambridge and Utrecht, and from the latter college obtained the degree of M.D. in 1685. Havers began his medical practise in London, and gave special attention to the subject of anatomy embodying his ideas in the *Osteologia Nova* (1691). This work was the first exhaustive treatise on the structure of

bone, and served to perpetuate the author's name by the term "Haversian canals." His other publications are a *Survey of the Microcosme* (1695), and a *Discourse of the Concoction of the Food* (1699).

HEBERDEN, WILLIAM (1710-1801). A practical physician of some celebrity. Was born in London. In 1724 he was sent to St. John's College, Cambridge, where he obtained a fellowship about 1730, became master of arts in 1732, and took his degree in physic in 1739. He remained at Cambridge about ten years longer as a practitioner of physic, and gave an annual course of lectures on materia medica. In 1746 he became a fellow of the Royal College of Physicians in London; and two years afterward established himself in London, where he was elected a fellow of the Royal Society in 1769. In 1778 he was made an honorary member of the Royal Society of Medicine at Paris. He died May 17.

HEBRA, FERDINAND RITTER von (1816-80). An Austrian dermatologist; born at Brünn. He was educated at the University of Vienna; in 1842 became instructor of the medical faculty; was appointed consulting physician of the general hospital of the city in 1848, and professor of dermatology in 1849. He was the first great German dermatologist, and entirely reformed the therapeutics of the science. He strongly indorsed local treatment. He wrote: *Atlas der Hautkrankheiten*, with Elsinger and Heitzmann (1856); *Lehrbuch der Hautkrankheiten*, with Kaposi (1872-76); and a third and smaller work under the former title, with Bärensprung (1867-68).

HECKER, JUSTUS FRIEDRICH KARL (1795-1850). A German physician and writer of medical history; born in Erfurt, Prussian Saxony. He was professor of medicine in the University of Berlin, and wrote: *Geschichte der Heilkunde* (1822-29); *Der Schwarze Tod im 14 Jahrhundert* (1832); *Die Tanzwut, eine Volkskrankheit im Mittelalter* (1832), translated into English by B. G. Babington, under the title, *The Dancing Mania of the Middle Ages* (1875); *Der englische Schweiss. Ein ärztlicher Beitrag zur Geschichte der neuern Heilkunde* (1839); *Kinderfahrten eine historisch-pathologische Skizze* (1845).

HELMONT, JAN BAPTISTA van (1577-1644). Chemist; born at Brussels, studied medicine, but soon threw himself into mysticism. Then, falling in with the writings of Paracelsus, he began to study chemistry and natural philosophy. In 1605 he married a noble lady of Brabant, and spent the remainder of his life in chemical investigation.

Van Helmont first emphasized the use of the balance in chemistry, and by its means showed the indestructibility of matter in chemical changes. He devoted much study to gases, and invented the word *gas*. He was also the first to take the melting-point of ice and the boiling-point of water as standards for temperature. He first employed the term *saturation* to signify the combination of an acid with a base; and he was one of the earliest investigators of the chemistry of the fluids of the human body. His works, entitled *Ortus Medicina*, were often reprinted. See French monograph by Rommelaere (1868). His youngest son, Franciscus Mercurius (1614-99) was a teacher of deaf-mutes. See French *Life* by Broeckx (1870).

HELMUTH, WILLIAM TOD (1833-1902). American physician; born at Philadelphia, October 30; died in New York, May 15; graduated from the Homeopathic Medical College, Philadelphia, 1853, and from Hahnemann College, San Francisco, 1866. In 1877 he became professor of surgery and dean of the New York Homeopathic College and Hospital. He was an officer in numerous medical associations and a member of the Société Médicale Homeopathique of France. Among his published works were: *Treatise on Diphtheria*; *Medical Pomposity*; *System of Surgery*; *Scratches of a Surgeon*; *Suprapubic Lithotomy*.

HEMPEL, CHARLES JULIUS (1811-79). A German-American physician; born at Solingen, Prussia, September 5; died in Grand Rapids, Mich., September 25. He came to America in 1835; graduated at the medical department of the University of New York in 1845; became professor of materia medica and therapeutics in the Hahnemann Medical College at Philadelphia in 1857; and subsequently practised medicine at Grand Rapids. He wrote *System of Materia Medica and Therapeutics* (1859), etc.

HENLE, FRIEDRICH GUSTAV JAKOB (1809-85). A noted German physiologist and anatomist; born at Fürth, Bavaria, July 9; died in Göttingen, May 13. He was professor successively at Zurich (1840), Heidelberg (1844), and Göttingen (1852). He wrote *Handbuch der rationellen Pathologie* (1846-52), *Handbuch der allgemeinen Anatomie* (1841), *Handbuch der systematischen Anatomie des Menschen* (1855-73), etc.

HENRY, WILLIAM (1774-1836). Chemist; born at Manchester, studied medicine in Edinburgh, practised in Manchester, but soon devoted himself to chemistry. He wrote valuable papers in the *Philosophical Transactions* and *Experimental Chemistry* (1799; 11th ed. 1829).

HERING, CONSTANTINE (1800-80). A German physician; born at Oschatz, Saxony, January 1. He studied medicine at Leipzig and Würzburg; was converted to homeopathy while preparing a refutation of its theories, and after personal acquaintance with Hahnemann became his admiring friend. The king of Saxony sent him to Surinam to study the flora and fauna of that country. In 1833 he arrived in Philadelphia, where he founded the first homeopathic school in the United States. From 1845 to 1869 he filled the chairs of homeopathic *materia medica* and medicine in this school. He edited the *Homeopathic Quarterly*, the *Homeopathic News*, and the *American Journal of Homeopathic Materia Medica*. He published in English and German on his favorite doctrine, among them the *Rise and Progress of Homeopathy*; *Effects of Snake-Poison*; *Condensed Materia Medica*; *Hering's Domestic Physician*; and *American Drug Provings*. He died in Philadelphia, July 23.

HEROPHILUS (about 300 B. C.). A famous surgeon; born at Chalcedon in Bithynia. He studied medicine under Praxagoras, one of the followers of Hippocrates, and afterward went to Alexandria in Egypt, where he became famous, and was one of the founders of the medical school in that city. His followers later spread to Pergamum, Laodicea, and elsewhere. Herophilus's greatest services were performed in the field of anatomy. He discovered the nerves and made important observations in connection with the eye. Several names which he gave to different parts of the body are still in use, one such, *ocular Herophili*, recording his own name. He is said to have practised vivisection upon condemned criminals. His writings were numerous, but we have only fragments thereof.

HINTON, JAMES (1822-75). Aurist and mystic; born at Reading, the son of a Baptist minister, settled in 1850 to a London practise, becoming a specialist in aural surgery. From 1862 till 1874 he was a lecturer at Guy's Hospital. He died in the Azores, December 16. He wrote *Man and his Dwelling-place* (1859), *Life in Nature* (1862), *The Mystery of Pain* (1865), *Philosophy and Religion* (1881), and *The Law-breakers and Coming of the Law* (1884). See *Life* by Ellice Hopkins (1878).

HIPPOCRATES (about 460-357 B. C.). The most celebrated physician of antiquity. He was born on the island of Cos, probably about 460 B. C.; and there, after visiting Athens, he settled in practise. He died at Larissa in Thessaly 357 or 359. The seventy-two works bearing his name were divided by Dr. Greenhill into eight classes. The first class

comprises works *certainly* written by Hippocrates, including *Prógnostica*; *Aphorismi* (perhaps not all genuine); *De Morbis Popularibus*; *De Ratione Victus in Morbis Acutis*; *De Aëre, Aquis, et Locis*; and *De Capitis Vulneribus*. The second class is composed of works *perhaps* written by Hippocrates. The others consist of works written before Hippocrates, works whose authorship is conjectural, works by quite unknown authors, wilful forgeries, etc. Hippocrates seems to have gathered up all that was sound in the past history of medicine, was good in diagnosis and prognosis, and believed that the four fluids or humors of the body (blood, phlegm, yellow bile and black bile) are the primary seats of disease. His works were first printed in a Latin translation in 1525. The first Greek edition (The Aldine) appeared in 1526. Good editions are by Littré, with French translations (10 vols. 1839-61) and Fuchs (3 vols. Mun. 1895). A scholarly edition by Ermerius, with a Latin rendering, was published in 1859-65; and an excellent English translation of the *Genuine Works of Hippocrates* in 1849 by Adams.

HIRSH, AUGUST (1817-94). A German physician, born at Danzig, where he practised after studying at Berlin, and Leipzig. In recognition of his studies on malarial fever and his work, *Handbuch der historisch-geographischen Pathologie* (2d ed. 1881-83), he was in 1863 made professor at Berlin. In 1873 he was a member of the German Cholera Commission, studied the conditions of Posen and West Prussia, and published a valuable report (1874). He studied the plague in Astrakhan in 1879, and 1880, and in the latter year wrote a report to his Government. His more important writings are: *Die Meningitis Cerebro-spinalis Epidemica* (1866); *Geschichte der Augenheilkunde* (1877); *Geschichte der medizinischen Wissenschaften in Deutschland* (1893); a revision of Hecker's collected writings, under the title *Die grossen Volkskrankheiten des Mittelalters* (1865). He edited *Biographische Lexikon der hervorragenden Aerzte Aller Zeiten und Völker* (1884-88); and with Virchow the *Jahresbericht über die Fortschritte und Leistungen der Medizin* (1866 et seq.).

HODGE, HUGH LENOX (1796-1873). An American surgeon; born at Philadelphia, June 27; graduated from Princeton; took medical degree from the University of Pennsylvania, and was for many years professor of obstetrics in the latter institution. He wrote a standard treatise on *Diseases Peculiar to Women* (1868), and was the author of a *System of Obstetrics* (1864). He died in Philadelphia, February 23.

- HOEVEN, JAN van der** (1801-68). Physician and zoological professor at Leyden, wrote a handbook of Zoology (trans. 1858). His brother, Cornelius Pruys (1792-1871), professor of Medicine at Leyden, wrote *De Historia Medicinae* (1842) and *De Historia Morborum* (1846).
- HOFFMAN, FREDERICH** (1660-1742). Was professor of medicine at Halle, and body physician to Frederick I. of Prussia. His chief work is *Medicina Rationalis Systematica* (1718-40).
- HOFFMANN, HEINRICH** (1809-94). A Frankfort Doctor, the author and illustrator of the immortal *Struwwelpeter* (1847).
- HOFMANN, AUGUST WILHELM von** (1818-92). Chemist; born at Giessen, April 8, became assistant there to Liebig. When the Royal College of Chemistry was established in London in 1845 Hofmann was made superintendent; and from 1856 to 1865 he was chemist to the royal mint. In 1865 he went to Berlin as professor of Chemistry, and, ennobled in 1888, he died there, May 5. His contributions to the scientific journals were mainly on organic chemistry. In the course of these researches he obtained aniline from coal-products. He devoted much labor to the theory of chemical types. His *Introduction to Modern Chemistry* (1865; 7th ed. 1877) led to great reforms in the teaching of chemistry. He wrote *The Life-work of Liebig* (1876), and, in German, on the chemists Wöhler (1883) and Dumas (1885), as also *Chemische Erinnerungen* (1882).
- HOLLAND, SIR HENRY** (1788-1873). Physician and writer. He was born at Knutsford, Cheshire, October 27; graduated at Edinburgh in 1811, and in 1815 published *Travels in Albania, Thessaly*, etc. He settled in London in 1816 and became one of the heads of his profession. In 1840, he was appointed physician to the Prince Consort, in 1852 to the Queen, and in 1853 was created a baronet. He published *Medical Notes and Reflections* (1839), *Chapters on Mental Physiology* (1852), *Essays on Scientific Subjects* (1862), and *Recollections of Past Life* (1871). He died in London, October 27.
- HOLMES, OLIVER WENDELL** (1809-94). Born in Cambridge, Mass., August 29, graduated at Harvard College in 1829, and, giving up law for medicine, spent two years in the hospitals of Europe. In 1839-41 he was professor of Anatomy and Physiology at Dartmouth College; then he engaged in general practise in Boston. From 1847 to 1882 he was professor of Anatomy at Harvard. He began writing verse while an undergraduate, but his first efforts were

not remarkable. Twenty years passed with desultory efforts and a slowly-increasing power, when *The Autocrat of the Breakfast Table* (1857-58) suddenly made him famous by its fresh unconventional tone, its playful wit and wisdom, and its lovely vignettes of verse. *The Professor at the Breakfast Table* (1858-59) and *The Poet at the Breakfast Table* (1872) deal with deeper questions in a less familiar way. His first effort in fiction was *Elsie Venner* (1859-60), a study of heredity. *The Guardian Angel* (1867), is a picture of rural New England. *A Moral Antipathy* (1885), contains but a thread of story. These works appeared in the *Atlantic Monthly*, of which he was one of the founders. He wrote for it also, many occasional essays and poems. Besides the early volume of poems (1836), he published *Songs in Many Keys* (1862), *Songs of Many Seasons*, (1875), *The Iron Gate* (1880), and *Before the Curfew* (1888). Other prose works are *Currents and Counter-currents* (1861), *Soundings from the Atlantic* (1864), *Border Lines of Knowledge* (1862), *Mechanism in Thought and Morals* (1871), and *Memoirs of Motley* (1879) and Emerson (1885). He also wrote *Our Hundred Days in Europe* (1887), an account of a visit made in 1886, during which he received honors from the Universities of Cambridge, Oxford and Edinburgh. He died in Boston, October 7. See *Lives* by Kennedy (1883), Emma E. Brown (1884), and Morse (1896).

HOLMGREN, ALARIK FRITHIOF (1831-97). A Swedish physiologist; born in Vestra Ny (East Gotland), and educated at the University of Upsala, at the University of Berlin under DuBois-Reymond and Helmholtz, and under Brücke and Ludwig in Vienna. In 1864 he became professor of physiology at Upsala, the first chair in that subject in Sweden, and soon afterwards founded a physiological laboratory. His medical studies were mostly in the field of ophthalmology, and he was an authority on color-blindness. His work on this subject, *Om färgblindheten i dess förhållande till järnvägstrafiken och sjöväsenet* (1887) has been translated into many languages. Holmgren was a firm believer in the hygienic value of Swedish gymnastics. He edited the *Skandinavisches Archiv für Physiologie* (1889-et seq.).

HOME, SIR EVERARD (1756-1832). A Scottish surgeon and anatomist; born at Hull, England, May 6; died in London, August 31. He was a pupil of his brother-in-law, John Hunter, and later his assistant. From 1821 he was surgeon to Chelsea Hospital. He wrote *Lectures on Comparative Anatomy* (1814-28), etc.

- HOOKE, WORTHINGTON** (1806-1867). An American physician and medical and scientific writer; born at Springfield, Mass., March 2; died in New Haven, Conn., November 6. He was professor of the theory and practise of medicine at Yale, from 1852 until his death.
- HORNER, WILLIAM EDMONDS** (1793-1853). An American physician; born in Warrentown, Va. He graduated at the University of Pennsylvania in 1814, was surgeon for a time in the United States Navy, and from 1831, until his death, was professor of anatomy in the University of Pennsylvania. In 1847 he founded Saint Joseph's Hospital. In 1824 he announced the discovery of the muscle (tensor tarsi) known as "Horner's muscle." He published a number of medical works, including: *Pathological Anatomy; Practical Anatomist* (1856); *Special Anatomy and Histology* (8th ed. 1851); *The United States Dissector* (5th ed. 1856); and superintended the preparation of an *Anatomical Atlas* by Henry H. Smith (1844).
- HORSFORD, EBENEZER NORTON** (1818-93). Chemist; born at Moscow, N. Y.; died in Cambridge, having filled a chair at Harvard, 1847-63.
- HOSACK, DAVID** (1769-1835). American physician and author; born at New York, August 31; died there December 23. He was graduated from Princeton College in 1789, and concluded his medical studies in Philadelphia in 1791. In 1795 he was appointed professor of botany in Columbia College. In 1796 the chair of materia medica was assigned to Hosack, who held it with that of botany until 1807, when he accepted the department of materia medica and of midwifery in the College of Physicians and Surgeons. He held at different times several public trusts, as physician to the New York Hospital, and the Bloomingdale Asylum, resident of the city of New York, etc. He was among the original projectors of the New York Historical Society, of the Horticultural Society, and of the New York Literary and Philosophical Society. He was the author of *Annals of Medicine* (1793); *Hortus Elginensis* (1808); and numerous papers on medical subjects.
- HOWARD, LUKE** (1772-1864). Chemist, botanist, and early meteorologist. Was born of Quaker parentage in London, and died at Tottenham.
- HOWE, SAMUEL GRIDLEY** (1801-76). American philanthropist; born at Boston; organized the medical staff of the Greek army in 1824-27, went to America to raise contributions, and, returning with supplies, formed a colony on the isthmus of Corinth. Swamp-fever drove him from

that country in 1830. In 1831 he went to Paris to study the methods of educating the blind, and becoming mixed up in the Polish insurrection, spent six weeks in a Prussian prison. On his return to Boston he established schools for the blind and for idiots. In 1851-53 he edited the anti-slavery *Commonwealth*, and in 1867 revisited Greece with supplies for the Cretans. See *Life* by F. A. Sanborn (N. Y. 1891).—His wife, Julia Ward, born in New York, May 27, 1819, became prominent in the woman suffrage movement, preached in Unitarian pulpits, and published, besides narratives of travel and a *Life of Margaret Fuller*, several volumes of poems and the *Battle Hymn of the Republic* (1861).

HUARTE, JUAN DE DIOS (about 1520-1600). A Spanish physician and philosopher; born in Navarre. He wrote a curious book on phrenology, *Exámen de ingenios para las ciencias* (1578). This volume was extremely popular, and was translated into several European languages—into English as *A Trial of Wits*. Some of his theories on education are very enlightened for the time, while others are fantastic in the extreme.

HUDSON, ERASMUS DARWIN (1805-1880). An American surgeon; born in Torrington, Conn., December 15; graduated at the Berkshire Medical School in 1827; from 1837 to 1849 was lecturing-agent for the Connecticut Antislavery Society; received an appointment from the government during the Civil War, to devise mechanical apparatus to be used in special cases of gun-shot wounds. From 1850 till his death he lived in New York, devoting himself to the construction of artificial limbs, etc. He was the author of *Medical and Surgical History of the War of the Rebellion 1870-72*. He died in Greenwich, Conn., December 31.

HUFELAND, CHRISTOPH WILHELM (1762-1836). A German physician; born at Langensalza in Thuringia. He studied medicine at Jena and Göttingen, was professor of medicine at Jena from 1793 to 1798; was physician in ordinary at the Court of Weimar, and resided at Berlin from 1798, where he was professor of therapeutics and pathology from the foundation of the university in 1810. He had a very high reputation for learning and skill as a physician, and he was equally esteemed for his intellectual abilities, and his noble and benevolent character. His published works are numerous, chiefly on medical and physiological subjects. His *Makrobiotik*, or the *Art of Prolonging Life* (1796), was translated into almost all the languages of Europe. Among his most important works are: *Ueber die*

Ursachen, Erkenntnis und Heilart der Skrofelkrankheit (1795); *Guter Rath an Mütter über die wichtigsten Punkte der physischen Erziehung der Kinder* (1799); and *Euchiridion Medicum* (1836).

HUNTER, JOHN (1728-93). Physiologist and surgeon; born at Long Calderwood, February 13. He became his brother's assistant in the dissecting-room (1748), studied surgery at Chelsea Hospital and St. Bartholomew's, and in 1754 entered St. George's Hospital, becoming house-surgeon in 1756 and lecturer for his brother in the anatomical school. In 1759 his health gave way, and in 1760 he entered the army as staff-surgeon, and served in the expedition to Belleisle and Portugal. At the peace in 1763 he started the practise of surgery in London, and devoted much time and money to comparative anatomy. In 1767 he was elected F.R.S., and in 1768 was appointed surgeon to St. George's Hospital. In 1776 he was appointed surgeon-extraordinary to the king. In 1785 he built his museum, with lecture-rooms, and tried his famous operation for the cure of aneurism. In 1786 he was appointed deputy-surgeon-general to the army. He died October 16, and was buried in the church of St.-Martin's-in-the-Fields, whence, thanks to Frank Buckland, his remains were translated in March, 1859 to Westminster Abbey. Hunter's collection, containing 10,563 specimens, was purchased by the government in 1795 for £15,000, and presented to the Royal College of Surgeons. He married in 1771 Anne Home (1742-1821), author of *My Mother bids me bind my hair*, and other songs set to music by Haydn. In addition to the numerous papers to the *Transactions*, he published books on the human teeth (1771-78), on venereal disease (1786), and *A Treatise on the Blood, Inflammation, and Gunshot Wounds* (1794). See the edition of his works by Palmer (1835), with prefixed *Life* by Otley, and Dr. Mather's *Two Great Scotchmen* (1894).

HUNTER, WILLIAM (1718-83). Anatomist and obstetrician. He was born at Long Calderwood, East Kilbride, May 23. He studied five years at Glasgow University with a view to the church, but in 1737 took up medicine, and, coming up to London from Edinburgh in 1741, was trained in anatomy at St. George's Hospital and elsewhere. From about 1748 he confined his practise to midwifery; in 1764 was appointed physician-extraordinary to Queen Charlotte; in 1767 was elected an F.R.S.; and in 1768 became professor of Anatomy to the Royal Academy. In 1770 he built a house with an ampitheatre for lectures, a dissecting-room, a

museum, and a cabinet of medals and coins. He died March 30, 1783. His museum was bequeathed finally, with an endowment of £8,000, to Glasgow University. His chief work was on the uterus.

HUTTON, JAMES (1726-97). One of the founders of geology. He was born at Edinburgh; studied medicine there, in Paris, and at Leyden, but in 1754 settled in Berwickshire and devoted himself to agriculture and chemistry, from which he was led to mineralogy and geology; in 1768 he removed to Edinburgh. The Huttonian theory, emphasizing the igneous origin of many rocks, and deprecating the hypothetical assumption of other causes than those we see still at work, was expounded in two papers read before the Royal Society of Edinburgh, *A Theory of the Earth* (1785) and *A Theory of Rain* (1784). The former was afterwards expanded into two volumes (1795). He also wrote *Dissertations in Natural Philosophy* (1792), *Considerations on the Nature of Coal and Culm* (1777), and other works.

HUXLEY, THOMAS HENRY (1825-95). Biologist, born at Ealing, Middlesex, May 4, studied medicine at Charing Cross Hospital, and in 1846-50, as assistant-surgeon of H. M. S. *Rattlesnake*, surveying the passage between the Barrier Reef and the Australian coast, collected marine animals, and made them the subjects of scientific papers for the Royal and Linnean Societies—notably one on the *Medusa*. An F.R.S. from 1851, he in 1853 wrote his memoir on the morphology of the Cephalous Mollusca. In 1854 he was appointed professor of Natural History, including Palæontology, in the Royal School of Mines, a post he held, with a curatorship in the Museum of Practical Geology, till 1885. In 1854 he wrote on the anatomy of the *Brachiopoda*. In 1856 he accompanied Tyndall to the Alps, and was joint-author of *Observations on Glaciers* (1857). In 1859 his *Oceanic Hydrozoa* was published by the Ray Society. His main work was vertebrate morphology and palæontology, with occasional excursions into ethnology; but he produced also papers on the *Aphis* (1858), the *Pyrosoma* (1860), a manual of the Invertebrata (1877), and a work on Crayfishes (1878). In vertebrate morphology there were the *Theory of the Vertebrate Skull*, (1858), *Man's Place in Nature* (1863), the article Amphibia, in *Enc. Britannica* (1875), *Lectures on Comparative Anatomy* (1864), and *An Introduction to the Classification of Animals* (1869). In palæontology there were memoirs on *Pterygotus* (1858) and *Belemnites* (1864), *Fossil Fishes* (1862), the *Neanderthal Skull* (1864), *Reptilian Remains from India* (1864), and *Evidences of Affinity Between Rep-*

tiles and Birds (1869-70). There were separate works on *Elementary Physiology* (1866), *Physiography* (1877), *Hume* (1879), and *Science and Culture* (1881). *Lay Sermons* appeared in 1870; *Essays on Controverted Questions* in 1892; and *Collected Essays* were republished, with an autobiographical article (9 vols. 1893-95). Huxley greatly interested himself in educational questions, strongly advocated Darwin's views and evolutionist doctrines, and in the magazines and elsewhere dealt in a trenchant manner with what he regarded as the obscurantist views of orthodox theologians and biblical students. He held examinerships and professorships in the University of London, the Royal Institution, and the Royal College of Surgeons; was president of the Ethnological Society and of the British Association; and was secretary and president of the Geological Society and of the Royal Society. He was elected in 1873 Lord Rector of the University of Aberdeen, and a member of the London School Board in 1870. He was Inspector of Salmon-fisheries 1881-85. A member of the Privy Council from 1892, he died at Eastbourne, June 29, and was buried in Marylebone Cemetery, Finchley. See *Life* by his son Leonard (1897).

HYRTL, JOSEPH (1811-94). An Austrian anatomist; born at Eisenstadt, Hungary, December 7; studied at Vienna, and acquired eminence as a scientific anatomist. He became professor of anatomy in Prague in 1837, and at Vienna in 1845. He contributed not a little to the progress of comparative anatomy, especially that of fishes, and made the anatomy of the ear a subject of particular investigation. He produced many books and articles on the subjects above indicated. Hyrtl formed a museum of comparative anatomy at Vienna, and became rector of the university. He was the author of *Topographische Anatomie* (1847); *Handbuch der Praktischen Zergliederungskunst* (1860); *Ueber Ampullen am Ductus Cysticus der Fische* (1868); *Das Nierenbecken der Säugethäre und des Menschen* (1870); *Das Arabische und Hebräische in der Anatomie* (1879); *Die Alten Deutschen Kunstworte der Anatomie* (1884); and other works. He died in Vienna, July 16.

I

IBN ABI USEIBIA, MUWAFFAK AD-DIN (about 1195-1269).

An Arabic physician and author. He was born in Cairo, of a family of physicians; lived in Egypt and Syria, and was educated at Damascus (1227-33). For two years he was head of a hospital at Damascus, then became Court doctor

to a Syrian emir. He is best known for his biographical lexicon of Mohammedan physicians, which has been edited by August Müller (Königsberg, 1884), and commented on by the same in *Ueber Ibn Abi und seine Geschichte der Aerzte* (Leyden, 1885). Consult Wüstenfeld, *Geschichte der arabischen Aerzte und Naturforscher* (Göttingen, 1840); Leclerc, *Histoire de la médecine arabe* (Paris, 1876); *Travaux de la Vème session du Congrès international des Orientalistes à Leide*, vol. II. (Leyden, 1884).

INGENHOUSZ, JOHANNES (1730-79). A Dutch physician. He died in England.

J

JACKSON, ABRAHAM REEVES (1827-92). An American surgeon; born in Philadelphia, June 17. After completing his education at the Pennsylvania Medical College, he practised at Stroudsburg until 1870, when he removed to Chicago, and founded the Woman's Hospital of the State of Illinois, of which he became surgeon-in-chief. In 1872 he was elected to the chair of diseases of women, a position which he held until elected president of the College of Physicians and Surgeons, at Chicago. He published a large number of valuable articles on diseases peculiar to women.

JACKSON, CHARLES THOMAS (1805-80). An American scientist; born at Plymouth, Mass., June 21. After studying medicine in America and Europe he settled in Boston, and began the practice of his profession. In 1838 he opened a laboratory for research in analytical chemistry, the first of its kind in the United States. In 1836 he was made state geologist of Maine, in 1839 of Rhode Island, and in 1841 of New Hampshire, retaining the last office until 1844. In 1847 congress appointed him to survey the mineral lands of Michigan, but, after two years devoted to this work, he was displaced in consequence of political changes. Dr. Jackson made many important scientific discoveries, one of the most valuable being that of etherization, for which he received a prize of 2,500 francs from the French Academy of Science. There have been several other claimants for the honor of having made this discovery, among them Horace Wells and W. G. T. Morton. He published many papers and reports, besides a *Manual of Etherization, with a History of its Discovery* (1861). He died at Somerville, Mass., August 29.

JACKSON, JAMES (1777-1867). An American physician;

brother of Charles Jackson; born at Newburyport, Mass., October 3. He was graduated from Harvard College in 1796; studied medicine in London, and on his return to Boston, in 1800, commenced practise there, devoting himself entirely to medical practise, to the exclusion of surgery and other branches. In 1803 he became a member of the Massachusetts Medical Society. In 1810, with Dr. John C. Warren, he brought before the community a proposition for establishing a hospital in the city of Boston. The first result of this was the organization of the asylum of the insane at Somerville, then included in Charlestown, and afterward of the Massachusetts General Hospital in Boston. Dr. Jackson was the first physician, and Dr. Warren was the first surgeon, to this institution. In 1810 he was chosen professor of clinical medicine in Harvard, and in 1812 professor of theory and practise, becoming professor emeritus in 1835. His principal publications were: *On the Brunonian System* (1809); *Remarks on the Medical Effects of Dentition*; *Letters to a Young Physician* (1855). Of the last work several editions were printed.

JACKSON, MERCY BISEE (1802-77). An American physician; born at Hardwick, Mass., September 17; practised medicine at Plymouth, and Boston, and in 1860 graduated from the New England Female Medical College. She was the first woman admitted to the American Institute of Homeopathy. She became professor of the diseases of children, in the Boston University School of Medicine, in 1873. She died in Boston, December 13.

JAMES, ROBERT (1705-76). A London physician. He was the discoverer of the patent diaphoretic medicine called James's Powder.

JARVIS, EDWARD (1803-84). American author and physiologist; born at Concord, Mass., January 9; was graduated at Harvard in 1826, and practised medicine in Massachusetts, where he became well known as an authority on insanity. In 1852, Dr. Jarvis became president of the American Statistical Association, and in this capacity prepared a large number of reports and tables on public health, longevity, mortality-rates and other matters pertaining to state medicine. He also wrote *Practical Physiology* (1848); and *Primary Physiology* (1859). He died at Dorchester, Mass., October 31.

JAY, SIR JAMES (1732-1815). An American physician; brother of John Jay. He was born in New York city, studied medicine, and became a practising physician. He was instrumental in obtaining the endowments for King's (now Columbia) College, New York, and Benjamin Frank-

lin's projected college (now the University of Pennsylvania) in Philadelphia. For the purpose of soliciting contributions for these colleges, he visited England in 1762, where he was knighted by King George III. His writings include two pamphlets relating to the collections made for the colleges in America (1771 and 1774), and *Reflections and Observations on the Gout* (1772).

JEFFRIES, JOHN (1744-1819). An American surgeon; born at Boston, February 5; graduated at Harvard, and studied medicine in London and Aberdeen. He returned to Boston in 1769; but on the evacuation of that city in 1776, accompanied the British army to Halifax, and was appointed surgeon-general of the forces in Nova Scotia by General Howe, and in 1779 surgeon-general of the British forces in America, with headquarters in Savannah, Ga. Returning to London at the close of hostilities, he devoted himself to practise with great success, and also to scientific experiments upon atmospheric phenomena, and to test the practicability of aerial navigation, made two balloon ascensions; in the second, January 7, 1785, ascending from the cliffs of Dover and alighting in the northeastern part of France. In 1789, Dr. Jeffries returned to Boston, where he gained great eminence, and still greater notoriety in attempting to give public lectures on anatomy; but on account of the great popular sentiment existing against dissection, he was compelled by mob violence to discontinue his course of instruction. He died in Boston, Sept. 16.

JENNER, EDWARD (1749-1823). The discoverer of vaccination; born at Berkeley vicarage, Gloucestershire, May 17. He was apprenticed to a surgeon at Sodbury; in 1770 went to London to study under John Hunter, and in 1773 settled at Berkeley, where he acquired a large practise. In 1775 he began to examine into the truth of the traditions respecting cow-pox, became convinced that it was efficacious as a protection against small-pox, and was led to hope that he would be able to propagate it from one human being to another, till he had disseminated the practise all over the globe, to the total extinction of small-pox. Many investigations delayed the actual discovery of the prophylactic power of vaccination, and the crowning experiment was made on May 14, 1796. This experiment was followed by many others; and in 1798, Jenner published his *Inquiry into the Causes and Effects of the Variolæ Vaccinæ*. Yet the practise met with violent opposition for a year, when upwards of seventy of the principal physicians and surgeons in London signed a declaration of their entire confidence in it. Jenner's dis-

covery was soon promulgated throughout the civilized world. Honors were conferred upon him, and he was elected an honorary member of nearly all the learned societies of Europe. Parliament voted him in 1802 a grant of £10,000, and in 1807 a second grant of £20,000. He died at Berkeley, January 26. See his *Life and Correspondence*, by Dr. J. Baron (1827-38; 2d ed. 1850).

JENNER, SIR WILLIAM (1815-98). Physician; born at Chatham; was educated at University College, London, where he was professor 1848-79. He became physician in ordinary to the Queen in 1862, and to the Prince of Wales in 1863; was made baronet in 1868, G.C.B., F.R.S., etc. He established the difference between typhus and typhoid fevers (1851). His *Lectures and Essays on Fever and Diphtheria* were published in 1893.

JOHNSTON, or JONSTON, ARTHUR (1587-1641). Physician and humanist; born at Caskieben, Aberdeenshire; he graduated M.D. at Padua in 1610, and visited many seats of learning. He practised medicine in France, whence his fame as a Latin poet spread over Europe. About 1625 he was appointed physician to King Charles I. His famous translation of the Psalms of David into Latin verse was published at Aberdeen in 1637. He helped to bring out the *Delitia Poetarum Scotorum hujus Ævi* (1637), to which he also contributed notable poems. In 1637 he became rector of King's College, Aberdeen, but his avocations as court physician kept him mainly in England. He died suddenly at Oxford in 1641. See monograph by Principal Geddes (1890).

JOHNSTON, JAMES FINLAY WEIR (1796-1855). Agricultural chemist. He was born of humble parentage at Paisley, and studied at Glasgow and at Stockholm (under Berzelius). In 1833 he became reader in chemistry and mineralogy at Durham, and there he died; but he resided chiefly in Edinburgh. He published *Elements of Agricultural Chemistry* (1842; 17th ed. 1894), *Catechism of Agricultural Chemistry and Geology* (1844; over 50 editions), and *Chemistry of Common Life* (1854; new ed. by Church, 1879).

JONES, ANSON (1798-1858). An American statesman. He was born in Great Barrington, Mass., January 20; began the practise of medicine in 1820, at Litchfield, Conn., and in 1833 settled in Brazoria county, Texas. During the war between Texas and Mexico, he was a surgeon in the Texan army, and in 1837 he was chosen to the Texan congress. From 1837 to 1839 he was minister to the United States government; in 1840 member of the senate; from

1841 to 1844 secretary of state; and from 1844 to its annexation to the United States was president of Texas. He strongly opposed annexation, and after it was accomplished, retired and engaged for the rest of his life in agriculture. He died January 7.

JONES, JOHN (1729-91). An American surgeon; born at Jamaica, N. Y., of Welsh descent. He studied medicine at Paris, Leyden, London, and Edinburgh; practised in New York; became professor of surgery in King's College; and, with Dr. S. Bard, founded the New York Hospital (1771). When New York was occupied by the British, he went to Philadelphia, where he was elected one of the physicians of the Pennsylvania Hospital; and in 1787, on the institution of the College of Physicians of Philadelphia, he was elected vice-president. He was Washington's family physician in Philadelphia, and the intimate friend and physician of Franklin, whom he attended in his last illness. He published *Plain Remarks upon Wounds and Fractures* (1775), republished with a memoir by Dr. Mease (1795). Jones was a skillful operator, and especially well known for his success in lithotomy.

JORG, JOHANN CHRISTIAN GOTTFRIED (1779-1856). A German physician; born at Prödel, and educated at Leipzig, where in 1810 he was made professor of midwifery. He did much to improve this branch of medicine, especially by the invention of mechanical aids and by a new system of Cæsarean section, gastro-elytrotomy. In general, he sought milder methods both in obstetrics and orthopedy. He wrote: *Handbuch der Krankheiten des Weibes* (3d ed., 1831); *Handbuch der Gehurtshilfe* (3d ed. 1833); *Handbuch zum Erkennen und Heilen der Kinderkrankheiten* (2d ed., 1836); and *Lehrbuch der Hebammenkunst* (5th ed., 1855).

JUNG, JOHANN HEINRICH "Jung Stilling" (1740-1817). A famous operator for cataract. He studied medicine at Strasburg, and practised at Elberfeld. Professor of Political Economy at Marburg (1787-1804) and then at Heidelberg, he wrote semi-mystical, semi-pietistic romances and works on political economy, but is best remembered by his charming autobiography (1777-1817; Eng. trans. 1835).

K

KANE, ELISHA KENT (1820-57). Arctic explorer; born in Philadelphia, February 3, and entering the U. S. navy as surgeon, visited China, the East Indies, Arabia, Egypt, Europe, the west coast of Africa, and Mexico. In

1850 he sailed as surgeon and naturalist with the first Grinnell expedition. His account of it appeared in 1854. In 1853 he again set out, this time as commander of an expedition; the results of which are fully detailed in his *Second Grinnell Expedition* (1856). He died at Havana, February 16. See *Life* by Elder (1858), and the briefer one by Jones (1890).

KANE, SIR ROBERT (1809-1890). Chemist; born in Dublin, September 24; studied medicine, and in 1831 became professor of Chemistry there, next year starting the *Dublin Journal of Medical Science*. In 1846 he originated the Museum of Industry in Ireland, was appointed its first director, and was knighted. He was president of Queen's College, Cork (1845-73), and in 1877 was elected president of the Royal Irish Academy. He died February 16. His chief books are *Elements of Chemistry* (1842) and *Industrial Resources of Ireland* (1844).

KEDZIE, ROBERT CLARK (1823-1902). An American chemist. He was born at Delhi, N. Y.; was largely self-educated before his entrance to Oberlin College, from which he was graduated in 1847, and spent the following years studying medicine in the University of Michigan. He practised at Vermontville, Mich., from 1852 until the outbreak of the Civil War, and, after serving as surgeon in the army, resumed the practice of medicine, at Lansing. He was elected to the chair of chemistry in the Michigan Agricultural College in 1863, and to the state legislature in 1870. As president of the State Board of Health, he paid special attention to arsenical wall-papers, and invented an oil-tester for the detection of inferior and dangerous grades of oil. But his most important service was to agricultural chemistry.

KEELEY, LESLIE E. (1836-1900). American physician; born in St. Lawrence county, N. Y.; removed in early life to Michigan; in 1863 graduated from Rush Medical College, Chicago; received the honorary degree of LL.D. from the University of St. Louis; was a surgeon in the War of the Rebellion; located in general practise at Dwight, Ills., in 1866. Dr. Keeley gained much notoriety on account of the methods in his treatment of alcoholism and narcotism. Regarding inebriety as a disease rather than a vice, his treatment was essentially therapeutic, though moral and social agencies were auxiliary means. His formulas were not given to the medical profession. His system was used in the United States army, in the national homes for disabled volunteer soldiers, among the Indians, and in state charitable insti-

tutions. His book, *The Non-Hereditry of Inebriety*, was published in 1896. The Keeley treatment is also known as the "gold cure" because of the use of chloride of gold as the essential drug in the treatment. The method was used extensively throughout the United States in various proprietary institutes known as Keeley Institutes, the graduates of which organized themselves into a national society called the Keeley League.

KING, DAN (1791-1864). An American physician; born in Mansfield, Conn., he studied medicine there, practised at Preston, Conn., and afterwards removed to Charlestown, R. I. Dr. King was actively interested in the political affairs of Rhode Island, and served in the State Legislature from 1828 to 1834. He supported the suffrage movement, of which Thomas Wilson Dorr became the head; but he did not sanction Dorr's headlong conduct after the suffrage party had failed to get control of the legislature. The Narragansett Indians, who were in a reduced condition, found an earnest helper in Dr. King. As a joint commissioner for the state he investigated the condition of the Indians and his report resulted in the establishment of an Indian school. His publications include a *Life and Times of Thomas Wilson Dorr* (1859).

KIRKBRIDE, THOMAS STORY (1809-83). American physician; born in Morrisville, Bucks county, Pa., July 31; received his medical education at the University of Pennsylvania. In 1832 he was made resident physician of the Friends' Asylum for the Insane at Frankfort, Pa., and from 1833 to 1835 held a similar position in the Pennsylvania Hospital for the Insane, Philadelphia, from 1840 till his death, remaining its superintendent. He was an authority on mental alienations, and published various important works on the care of the insane, including *The Construction, Organization and General Management of Hospitals for the Insane* (1854); and *Appeal for the Insane* (1854). He was the first in America to place the sexes in separate institutions; was one of the founders and for eight years president of the Association of Superintendents of Institutions for the Insane. He died December 17.

KIRKLAND, JARED POTTER (1793-1877). An American naturalist; born at Wallingford, Conn., he studied medicine at Yale, at the same time taking lessons in botany from Ives, and in mineralogy and zoölogy from Silliman, and later continued his medical studies at the University of Pennsylvania. He practised in Durham until the death of his wife and daughter, in 1823, and then went to Ohio. He

practised in Poland, Ohio; became professor of the theory and practise of medicine in the Ohio Medical College, and in 1837 an assistant on the geological survey; and from 1843 to 1864 was professor in the Cleveland Medical College, of which he was a founder. Kirkland was a skilled taxidermist and an enthusiastic fruit-grower, but he is best known for his zoölogical studies. He discovered *parthenogenesis* in insects and the distinction of sex in the *Unionida*, and made valuable researches on the fresh-water fishes of Ohio.

KLAPROTH, MARTIN HEINRICH (1743-1817). A German chemist. He was born at Wernigerode, Saxony, December 1; began life as an apothecary's apprentice and clerk, employing his leisure in acquiring a thorough knowledge of chemistry, and publishing a number of valuable analyses; made professor of chemistry at the Berlin School of Artillery in 1787 and at the University in 1789. He discovered the metals zirconium, titanium and uranium. His method of analysis assisted greatly the proper classification of minerals. An enthusiastic believer in the theories of Lavoisier, he was made a corresponding member of the French Institute. He edited a *Chemical Dictionary* (5 vols., 1807-10), wrote a *Chemical Manual*, and contributed a number of papers to the *Denkschriften* of the Berlin Academy. He was the father of Heinrich Julius von Klaproth, the astronomer. He died in Berlin, January 1.

KORTUM, KARL ARNOLD (1745-1824). A German physician and author; born at Mülheim-on-the-Ruhr, Prussia. He studied and practised medicine at Duisburg, and afterwards at Bochum, and besides several medical works wrote *Verteidigung der Alchemie* (1789), also treatises on bee-culture and antiquarian subjects. But he is chiefly remembered as the author of *Leben, Meinungen und Thaten von Hieronymus Jobs dem Kandidaten* (1784)—a grotesque, comical epic, which subsequently went through many editions under the title *Die Jobsiade* (14th ed. 1888, with the woodcuts of the original, an introduction, and notes), and whose popularity was greatly increased through the paintings of Hasenclever, representing various scenes from the poem. Consult Deicke, *Der Jobsiadendichter Karl Arnold Kortum* (Mülheim-on-the-Ruhr, 1893).

KRISHABER, MAURICE (1836-83). A French laryngologist. One of the founders of the modern treatment of diseases of the larynx. He was born in Hungary, and studied medicine at Vienna and Prague, and at Paris, where he began to practise in 1864. He founded the *Annales des maladies de l'*

oreille et du larynx (1875); devoted himself to nervous diseases; and wrote: *Des laryngopathies pendant les premières phases de la syphilis*, with Mauriac (1876); "Sur le cancer du larynx," in the *Annales* (1879); and on "Krishaber's disease"; *De la neuropathie cérébro-cardiaque* (1873).

KUCHENMEISTER, GOTTLÖB FRIEDRICH HEINRICH

(1821-90). German scientist; born in Buchheim, Saxony, January 22; received his M.D. from Leipsic, 1846; concentrated his attention upon the study of *entozoa* and the metamorphoses of intestinal worms, his most important work on the subject *On the Animal and Vegetable Parasites of the Human Body* (1855), having gone through several editions and been translated into English; from 1862 to 1865 he edited the *Zeitschrift des Norddeutschen Chirurgen Vereins*; and in 1874-75, the *Allgemeine Zeitschrift für Epidemiologie*. His main theories are found discussed in *Parasitism; Tapeworms*.

KUSSMAUL, ADOLF (1822-1902). A German physician; born at Graben and educated at Heidelberg. There he was assistant for some time, and wrote the valuable work, *Die Farbenercheinungen im Grunde des menschlichen Auges* (1845). In 1857 he was made professor at Heidelberg, and afterward held chairs in Erlangen (1859-63), at Freiburg (1863-76), and at Strassburg (1876-88). He then retired to Heidelberg, where he was professor emeritus until his death. Kussmaul devised much apparatus for use in internal therapeutics, and in 1867 introduced the use of the stomach-pump. In the realms of physiology, psychiatry, toxicology, and especially internal medicine, he was an able and an industrious investigator. Among his most important publications are: *Untersuchungen über das Seelenleben des neugeborenen Menschen* (3d ed. 1896); *Ueber den konstitutionellen Merkurialismus* (1861); *Zwanzig Briefe über Menschenpocken und Kuhpockenimpfung* (1870); *Die Störungen der Sprache; Versuch einer Pathologie der Sprache* (1877), which by many is considered his most remarkable work, and a translation of which may be found in Ziemssen *Cyclopædia of Practical Medicine* (New York, 1887), and an interesting autobiography, *Jugenderinnerungen eines alten Arztes* (5th ed. 1902).

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LACAZE-DUTHIERS, HENRI DE (1821-1901). A comparative anatomist; author of a series of elaborate and richly illustrated memoirs on mollusks, parasitic crustacea, and the red coral. He was born at Montpezat, France, May 15;

was appointed in 1865 to the chair of zoölogy at the Museum of Natural History and three years later he was called to the Sorbonne. Elected a member of the Academy of Science in 1871; he afterwards became its president. He was founder of the marine zoölogical laboratories of Roscoff and of Banyuls-sur-Mer, on the Mediterranean; also founder and editor of *Archives de la zoölogie expérimentale*. During the last thirty years of his life he was the animating spirit of French zoölogy.

LAENNEC, RENE THEODORE HYACINTHE (1781-1826). Inventor of the stethoscope; born at Quimper in Brittany; from 1799 an army-doctor, in 1814 became editor of the *Journal de Médecine*, and in 1816 chief physician to the Hôpital Necker. In 1819 he published his *Traité de l'Auscultation Médiate*. See *Lives* by Lallour (1868) and Du Chatellier (1885).

LA METTRIE, JULIEN OFFRAY DE (1709-51). A French physician and materialist. He was born at Saint-Malo; was educated at Paris, at Rheims, and under Boerhaave in Leyden. In 1742 he became physician to the Gardes Françaises. He fought at Dettingen and Fontenoy, but in 1746 was driven from France, and then from Leyden on account of his materialistic *Histoire naturelle de l'âme*. He was well received by Frederick the Great, and wrote *L'homme machine* (1748); *L'homme plante* (1748); and *Réflexions sur l'origine des animaux* (1750). His *Ouvrage de Pénélope ou le Machiavel en médecine* (1748), was a general attack on all the great scientists and physicians of his time.

LANGENBECK, BERNARD RUDOLPH VON (1810-87). A German surgeon; nephew and pupil of Konrad Johann Martin Langenbeck, born at Pardingbüttel. He studied at Göttingen, then visited France and England, and, after teaching for some time at Göttingen, was called in 1842 to the chair of surgery in the University of Kiel. In 1847 he succeeded Dieffenbach at the Berlin Clinical Institute of Surgery. He soon acquired a world-wide reputation, first through skill and success in operations for harelip; then in plastic surgery of the nose, eyelids, and lip; and finally by his noted methods of resection, in which the diseased or injured part only of a bone is removed, instead of amputation of the entire limb. For services in the war with Denmark, a grant of nobility was accorded him; and he received in 1866 the highest medical rank the Prussian army affords. Langenbeck was in active medical military service during the German campaigns of 1866 and 1870-71. Beginning with 1860, Langenbeck edited, with Billroth and Gurlt, the *Archiv für*

Klinische Chirurgie, and he published, besides numerous papers on surgical topics, *Chirurgische Beobachtungen aus dem Kriegl* (Berlin, 1874).

LANGENBECK, KONRAD JOHANN MARTIN (1776-1851). A German surgeon; born at Horneburg and educated at Jena, Vienna and Würzburg. He received his degree at Göttingen (1802) and afterwards was appointed a professor there. He was famed for his swift and unerring use of the knife and for his success as a teacher. He edited the *Bibliothek für Chirurgie und Ophthalmologie* (1806-28), the organ of the surgical and optical clinic, which he founded in 1807; and wrote widely on general and special surgery.

LANKESTER, EDWIN (1814-74). An English physician. He was born at Melton, Leicestershire, April 23. After studying medicine at University College, London, and at Heidelberg, where he graduated in 1839, he became lecturer in St. George's School of Medicine; in 1850 professor of New College, London; and in 1866 editor of *The Journal of Social Science*. He published *Vegetable Physiology; School Manual of Health*; and other medical works for popular use. He died October 30.

LARREY, JEAN DOMINIQUE, BARON (1766-1842). French surgeon; born at Beaudéan near Bagnères-de-Bigorre, served as a naval surgeon, and in 1793 joining the army, introduced the "flying ambulance" service. From 1797 he accompanied Napoleon in his campaigns, became head of the army medical department, and a baron. He wrote on army surgery and the treatment of wounds. See German *memoir* by Werner (1885).

LATHAM, JOHN (1740-1837). M.D. and ornithologist; born at Eltham, England; lived from 1796 at Romsey.

LATHAM, ROBERT GORDON (1812-88). Ethnologist and philologist, was born at Billingborough vicarage, Lincolnshire, March 24. From Eton he passed in 1829 to King's College, Cambridge, of which he was elected fellow. From 1842 (when he took his M.D.) to 1849 he held appointments in London hospitals; in 1839 he became professor of English in University College, London, a tour of six years before in Denmark and Norway having directed his attention to Scandinavian philology. *Norway and the Norwegians* (1840) was followed by *English Language* (1841), *Natural History of the Varieties of Mankind* (1850), *Ethnology of the British Colonies* (1851), *Ethnology of the British Islands* (1852), *Man and his Migrations* (1851), *Descriptive Ethnology* (1859), *Ethnology of Europe* (1852), *Native Races of the Russian Empire* (1854), a new edition of Johnson's

Dictionary (1870), *Outlines of General Philology* (1878). In *Elements of Comparative Philology* (1862) he advanced the view, since affirmed by Penka, Schrader, Isaac Taylor, and Sayce, that the Aryan race originated in Europe. He died at Putney, March 9. In 1863 he received a government pension of £100. See obituary by T. Watts-Dunton in *Athenæum* (March 17, 1888).

LAURENT, AUGUSTE (1807-63). French chemist; born at Folie, Haute-Saône, November 14; died in Paris, April 15. In 1836 he became professor of the Academy of Sciences of Bordeaux, which post he held for eight years. In 1848 he was made assayer to the mint and chemical adviser of the minister of war. His researches were very numerous, embracing all departments of the science, organic and inorganic, opening up new fields and new views. He was one of the champions of the unitary system against the dualistic, held by most of the chemists of the time. He was opposed also to the electro-chemical theory, which his investigations into the derivatives of naphthaline did so much to shake, and maintained the doctrine of types—forms of constitution of bodies, which admitted of parts being substituted by other elemental or compound substances without the type of the original body being altered. His views on general chemical theory appeared in a posthumous work entitled *Méthode de Chimie*, translated into English by Odling, and published by the Cavendish Society, 1855. Many of his doctrines advocated there as novelties, are now universally accepted, and have become a fundamental part of modern chemical theory, classification, and instruction.

LAVOISIER, ANTOINE LAURENT (1743-94). The founder of modern chemistry. He was born in Paris, August 26. To obtain means for his investigations he accepted, in 1769, the office of farmer-general; in 1768 he was made an Academician. As director of the government powder-mills he discovered (1776) a way of greatly improving gunpowder; and in 1791 he was appointed a treasury commissioner. He rendered great service in the application of chemistry to agriculture; but his discovery of oxygen independent of Priestley, has been questioned. Lavoisier's services to science could not save him from the rage against farmers of taxes, during the Reign of Terror, and he was guillotined, May 8. *Traité Élémentaire de Chimie* (1789) is his masterpiece; he also wrote *Mémoires de Chimie* (1805). His *Complete Works* were published in 1864-68. See *Lives* by Grimaux (1888), Berthelot (1890), and Schultze (Hamb. 1895).

LAWRENCE, SIR WILLIAM (1783-1867). English surgeon;

born at Cirencester, became in 1815 professor of anatomy to the College of Surgeons, and in 1824 surgeon at St. Bartholomew's. Two months before his death he was created a baronet. He wrote some important medical works.

LAYCOCK, THOMAS (1812-76). An English physiologist, professor of the practise of physic in Edinburgh University. He was born in Wetherby, Yorkshire; died at Edinburgh, September 21. He wrote *A Treatise on the Nervous Diseases of Women* (1840), *Mind and Brain* (1859), etc.

LEACH, WILLIAM ELFORD (1790-1836). An English physician and naturalist; born at Plymouth, England; he died of cholera at the Palazzo San Sebastiano, near Tortona, Italy, August 25. He was assistant librarian and later assistant keeper of the natural-history department in the British Museum; noted especially for his work in entomology and malacology. He withdrew from the museum in 1821. He published *The Zoological Miscellany* (1814-17), *Malacostraca podophthalma Britannia, or a Monograph on the British Crabs*, etc. (1815-16), *Systematic Catalogue of the Specimens of the Indigenous Mammalia and Birds that are preserved in the British Museum*, etc. (1816), *A Synopsis of the Mollusca of Great Britain*, etc. (ed. by J. E. Gray, 1852; but in part printed and circulated as early as 1820).

LEBERT, HERMANN (1813-78). A German physician, noted as a pathologist; born at Breslau, Prussia, June 9; died at Bex, Switzerland, August 1. He practised medicine for a time in Paris, and was professor at Zurich in 1853-59, and at Breslau, 1859-74. He wrote *Physiologie pathologique* (1845), *Anatomie pathologique* (1854-62), *Allgemeine Pathologie* (1865), etc.

LE CONTE, JOHN LAWRENCE (1825-83). American entomologist; born at New York, May 13; died in Philadelphia, November 15. He was a nephew of Lewis Le Conte. He was graduated from Mount St. Mary's College (Emmitsburg Medical) in 1842, from the College of Physicians and Surgeons in 1846, became a surgeon of volunteers in the Federal army in 1862, and was later made medical inspector of the United States army, with rank of lieutenant-colonel. In 1873 he was chosen to the presidency of the American Association for the Advancement of Science. He was generally recognized as an important authority on entomology, and published on that subject: *Classification of the Coleoptera of North America* (1862-73); *List of the Coleoptera of North America* (1866); and *New Species of North American Coleoptera* (1866-73).

LEE, FRANCIS (1661-1719). An English physician and scholar; born at Cobham, in Surrey, March 12, and died at Gravelines, Flanders, August 23. He was a graduate of St. John's College, Oxford, and especially noted for his knowledge of Oriental literature. He was a voluminous writer.

LEGRAND, DU SAULLE HENRI (1830-86). A French alienist. He was born at Dijon, studied medicine there, was interne at Rouen and at Charenton; was associate editor of the *Gazette des hôpitaux* (1854-62); and in 1862 became doctor of medicine with a thesis *De la monomanie incendiaire*. He was an associate of Lasègne at the prefecture of police, Paris; was physician at the Salpêtrière (1877), and chief physician of the special infirmary for the insane at the prefecture of police, Paris (1883). He was long editor of the *Annales médico-psychologiques*. His principal works were: *La folie devant les tribunaux* (1869); an essay on *Le délire des persécutions* (1871); *Etude médico-légale sur les épileptiques* (1877); and *Traité de médecine légale* (1886).

LEIDY, JOSEPH (1823-91). An American naturalist; born in Philadelphia, September 9. He was graduated from the medical department of the University of Pennsylvania in 1844. In 1845 he became professor to the chair of anatomy of the same school, and in 1846 demonstrator of anatomy in Franklin Medical College. In 1853 Dr. Leidy was made professor of anatomy in the University of Pennsylvania and in 1871 he was called to the professorship of natural history in Swarthmore College, which position he held till 1884. On the establishment of the department of biology in the University of Pennsylvania in 1884, Dr. Leidy became its director. He held this office to the time of his death. He was a member of numerous scientific societies, and published some 800 papers on biological subjects. His principal works are *Memoir on the Extinct Species of the American Ox*; *A Flora and Fauna within Living Animals*; *Ancient Fauna of Nebraska*; *On the Extinct Sloth Tribe of North America*; *Cretaceous Reptiles of the United States*; *The Extinct Mammalian Fauna of Dakota and Nebraska*; *On the Fossil Horse*; *Parasites of the Termites*; *The Tapeworm in Birds*; and *Extinct Vertebrate Fauna of Western Territories*. He was also the author of *An Elementary Text-Book on Human Anatomy* (1861). The value of his scientific work was substantially recognized by the council of the Boston Society of Natural History, which awarded him the Walker prize. On account of the extraordinary merit of his researches, the

prize, which usually consists of the sum of \$500, was on this occasion increased to \$1,000. He died April 30.

LEIGHTON, ALEXANDER (1568-1649). A Scottish physician and divine; born in Scotland. He was a fierce opponent of Romanism, and was fined, mutilated, and imprisoned (1630-40), for his attack upon the Episcopacy and the Queen, and released and recompensed with a gift of £6,000 by the Long Parliament. He wrote *Speculum Belli Sacri, or the Looking Glass of War* (1624), and *An Appeal to the Parliament, or Sion's Plea against the Prelacie* (1628).

LESTOCQ, COUNT JOHANN HERMANN VON (1692-1767). A surgeon at the Russian court, a favorite and counsellor of the Empress Elizabeth, 1741-48. He was born at Celle, Prussia, April 29; died June 23.

LEURET, FRANÇOIS (1797-1851). A French physician; born in Nancy. He made a special study of the treatment of the insane and ultimately became director of the asylum at Bicêtre. His works include: *De la fréquence du pouls chez les aliénés* (1832), with Mitivié; *Fragments psychologiques sur la folie* (1834); *Anatomie comparée an système nerveux* (1839-58), completed by Gratiolet; and *Du traitement moral de la folie* (1840).

LEVER, CHARLES (1806-72). Novelist; born in Dublin, August 31, graduated at Trinity College in 1827, and then went to Göttingen to study medicine. His most popular work, *Charles O'Malley*, is a reflex of his own college life in Dublin. About 1829 he spent some time in the backwoods of Canada and North America, and embodied his experiences in *Con Cregan* and *Arthur O'Leary*. He practised medicine at various Irish country towns, and in 1840 at Brussels, having ere this written *Harry Lorrequer* (1840) and *Charles O'Malley* (1841) for the *Dublin University Magazine*. Returning to Dublin, he published *Jack Hinton* in 1843, and from 1842 to 1845 acted as editor of the *Dublin University Magazine*, and wrote *Arthur O'Leary*, *Tom Burke of Ours*, and *The O'Donoghue*. In 1845 he again went to Brussels, Bonn, Carlsruhe, where he published the *Knight of Gwynne*, and Florence, where he wrote *Roland Cashel*. At Spezzia, *Luttrell of Arran*, *Con Cregan*, *Sir Jasper Carew*, and *The Dodd Family Abroad* were produced in rapid succession. Then, completely changing his style, he wrote the *Fortunes of Glencore*, followed by *The Martins of Cro-Martin*, and *The Daltons*. Lever was in 1852 appointed British vice-consul at Spezzia, and continued to write, publishing *Davenport Dunn*, *One of Them*, *Gerald*

Fitzgerald, A Day's Ride, Sir Brook Fosbrooke, That Boy of Norcott's, and some racy essays in *Blackwood's* by "Cornelius O'Dowd." In 1867 he was promoted to the consulship at Trieste, where he died June 1. It is by his brilliant, rollicking sketches of a phase of Irish life which was passing away that Lever lives, and by Hablot K. Browne's illustrations to his novels. No doubt he created a false idea of Irish society and of the Irish character; his caricatures have been taken as accurate representations. There is a poor *Memoir* by Fitzpatrick (1879; new ed. 1896); his daughter edited his novels (37 vols., 1897-99).

LEWIN, GEORG RICHARD (1820-96). A German physician; born at Sondershausen, he studied medicine in Berlin, Halle, Leipzig, Heidelberg, Vienna, and Paris, and was made professor of dermatology at Berlin in 1868. He was best known by his novel treatment of laryngitis and of syphilis, as set forth in *Die Inhalationstherapie in Krankheiten der Respirationsorgane* (2d ed. 1865), and *Die Behandlung der Syphilis durch subkutane Sublimatinjektion*.

LEWIS, DIO (1823-86). An American physician. He was born at Auburn, N. Y., March 3; studied at Harvard Medical School, and practised for a time at Port Byron, N. Y., and at Buffalo. He founded an institution for training teachers, at Boston in 1863, and in 1864, at Lexington, Mass., he established a school for young ladies. He published numerous works on health and hygiene, and wrote a great deal on education and gymnastics as an element in educational training. His death occurred May 21, at Yonkers, N. Y.

LEYBOURN, WILLIAM (1626-1700). An English surgeon and mathematician. He was the author with Vincent Wing, of the first English treatise on astronomy, *Urania Practica* (1648). He also published *Planometria* (1650: republished as *The Complete Surveyor* 1653), *Arithmetick, Vulgar, Decimal, and Instrumental* (1657), *Census Mathematicus* (1690), *Panarithmologia*, the earliest English ready reckoner (1693), etc.

LEYDEN, JOHN (1775-1811). Poet and orientalist; born a shepherd's son, at Denholm, Roxburgshire, September 8. He entered Edinburgh University in 1790, and was licensed as a preacher in 1798. He helped Scott to gather materials for his *Border Minstrelsy*, especially for the essay on fairy superstitions. He was also a contributor to Lewis's *Tales of Wonder*. His first prose work was *Discoveries of Europeans in Northern and Western Africa* (1799). His translations and poems in the *Edinburgh Magazine* attracted attention; and *Scenes of Infancy, descriptive of Teviotdale*,

was completed in 1803. In that year he sailed for India as assistant-surgeon at Madras; was surgeon and naturalist on the survey of Mysore and Travancore (1804); resided for a time at Penang; was professor in the Bengal College, and afterwards judge, commissioner of the Court of Requests, and assay-master of the mint at Calcutta. Meanwhile he translated the Gospels into five languages. He accompanied Lord Minto as interpreter to Java, and died of fever at Batavia, August 27. His ballads have taken a higher place than his longer poems. He knew thirty-four languages or dialects, and wrote a preliminary dissertation to the *Complaynt of Scotland* (1801), an essay on Indo-Chinese languages and literature, *Memoirs of Baber* (completed by Ers-kine, 1826), and *Malay Annals* (1821). See his *Poetical Remains* (1819); *Poems and Ballads*, with reprint of *Memoir* by Scott (1875); and *Poetical works*, with *Memoir* by T. Brown (1875).

LIEBIG, JUSTUS FREIHERR VON (1803-73). Chemist; born at Darmstadt, May 12, he studied at Bonn and Erlangen, and in 1822 went to Paris, where Gay-Lussac took him into his laboratory. In 1824 he became professor of chemistry at Giessen, and in 1852 at Munich. He died April 18, having in 1845 been created Baron. Liebig was one of the most illustrious chemists of his age; equally great in method and in practical application, he made his mark in organic chemistry, animal chemistry, the doctrine of alcohols, etc. He was the founder of agricultural chemistry, and a discoverer of chloroform and chloral. As inventor of extract of beef and prepared infant food his name is known throughout the world. By him an admirable chemical laboratory—practically the first—was established at Giessen. He vastly extended the method of organic analysis, and invented appliances for analysis by combustion and Liebig's condenser. His most important treatises, mostly translated into English, were on the analysis of organic bodies (1837), *Animal Chemistry* (1842), *Organic Chemistry* (1843), *Resarches on Flesh and its Preparation* (1847), *Agricultural Chemistry* (1855), *Chemische Briefe* (1844); besides numerous papers in scientific journals (317 in the Royal Society's *Transactions*). See four volumes of his *Correspondence* (1884-92), and English *Lives* by A. W. Hofmann (1876) and W. A. Shenstone (1895).

LINACRE, THOMAS (about 1460-1524). Born at Canterbury, he studied at Oxford, was elected fellow of All-Souls' in 1484, and went to Italy, where he learned Greek, and took his M.D. at Padua. About 1501 Henry VII made him tutor

- to Prince Arthur. As King's physician to Henry VII and Henry VIII he practised in London; he also founded the Royal College of Physicians. Late in life he took orders. He died October 20. Linacre was one of the earliest champions of the New Learning. He translated several of Galen's works into Latin, and wrote some grammatical treatises. See *Life* by Dr. Noble Johnson (1835).
- LIND, JAMES** (1736-1812). Scotch physician and scientist. He settled at Windsor about 1777, and is mentioned by Madame D'Arblay and Shelley.
- LINDSLEY, JOHN BERRIEN** (1822-97). American educator. He was born at Princeton, N. J., October 24; died December 7. He graduated from the University of Nashville in 1839 and received his degree in medicine at the University of Pennsylvania. Studying theology, he was ordained to the Presbyterian ministry in 1846 and preached for several years. He became professor of chemistry in the University of Nashville in 1850, and was chancellor of the institution 1853-73. He was likewise professor of chemistry in the University of Tennessee, 1880-97, and of materia medica in the Tennessee College of Pharmacy, 1896-97. He published *Our Ruin, its Causes and Cure* (1868); *The Military Annals of Tennessee* (1886).
- LISTON, ROBERT** (1794-1847). Scotch surgeon; born at Ecclesmachan manse, Linlithgow, October 28, he studied at Edinburgh and London, and settled at Edinburgh in 1818 as lecturer on surgery and anatomy. His surgical skill soon won him a European reputation; in 1835 he became professor of clinical surgery at University College, London. He died December 7. His chief works are *Elements of Surgery* (1831) and *Practical Surgery* (1837).
- LIZARS, JOHN** (about 1787-1860). An Edinburgh surgeon; brother of the Wilkie-like painter and engraver, William Home Lizars (1788-1859). (Originally *Lizzers*, modified to *Lizahrs*.)
- LONG, CRAWFORD W.** (1815-78). American physician. Discoverer of anæsthesia; born in Danielsville, Ga., November 1; he graduated from Franklin College, Georgia, in 1835, and from the medical department of the University of Pennsylvania in 1839. From that date he practised in Jefferson, Ga., until 1851, when he removed to Athens, Ga. On March 30, 1842, he used ether as an anæsthetic during an operation for the removal of a tumor from the neck of James W. Venable, a young man of twenty. This was more than two years prior to any operation under anæsthesia by any other physician, the earliest of such other operations being

one performed by Dr. Horace Wells (without knowledge, however, of Dr. Long's prior operation), in December, 1844, when nitrous-oxide gas was used as the anæsthetic agent. Dr. Long performed other operations under anæsthesia on July 3, 1842; September 9, 1843, and January 8, 1845, but he did not publish his discovery until 1849, by which time several other physicians, including Horace Wells, William T. G. Morton, Charles T. Jackson, and James Y. Simpson, had independently adopted the practise of anæsthesia during surgical operations. In 1854 Dr. Long was named, with Wells, Morton, and Jackson in a bill before the United States Senate, to reward the probable discoverers of practical anæsthesia. He died at Athens, Ga., June 16.

LOOMIS, ALFRED LEBBEUS (1831-95). An American physician; born at Bennington, Vermont, June 10. He graduated from Union College in 1851, and received the degree of M.D. from the College of Physicians and Surgeons, New York, in 1853; devoted himself to the study and cure of pulmonary diseases; he soon won a national reputation. Was visiting physician to Bellevue Hospital in 1860, and to Mount Sinai Hospital in 1874; in 1867 professor of pathology and practise of medicine at the College of Physicians and Surgeons, to which a friend of his donated \$100,000 for the founding of a Loomis laboratory; president of the New York Pathological and Medical societies, of the New York Academy of Medicine (1890-92), and of the College of American Physicians and Surgeons (1894). He died January 23. His best-known books are *Lessons in Physical Diagnosis* (1877); *Diseases of the Respiratory Organs, Heart and Kidneys* (1876); *Lectures on Fevers* (1882); *Diseases of Old Age* (1882); *A Text-Book of Practical Medicine* (1884).

LORETA, COUNT PIETRO (1831-89). An Italian surgeon; born in Ravenna, and educated at Bologna. In 1861 he was made astronomical prosector of Calori at Bologna. In 1865 he took charge of the surgical clinic and in 1868 became professor of surgery in the University of Bologna. A famous surgeon, he is best known for his device for dilatation of the pylorus for cancer. Loreta wrote: *Nuovo metodo di cistatomia perineale; Nuovo metodo di cura degli aneurismi; La divulsione digitale del piloro; La divulsione instrumentale del cardia, and La resezione del fegato.*

LORINSER, KARL IGNAZ (1796-1853). A German physician; born at Niemes, Northern Bohemia. After studying at the universities of Prague and Berlin, he was appointed a lecturer at Berlin in 1818, and a member of the College

of Medicine at Stettin in 1822. From 1824 to 1850 he was a councilor in the Prussian Government service. In the study of epidemics, he traveled through Hungary, Transylvania and Galicia. His works, *Untersuchungen über die Rinderpest* (1831) and *Die Pest des Orients* (1837), deal with these investigations. His *Zum Schultze der Gesundheit in den Schulen* (1836; new ed. 1861) effected a revival of gymnastics in German schools. His autobiography appeared in 1864.

LOZIER, CLEMENCE SOPHIA, née HARNED (1812-88).

American physician; born at Plainfield, N. J., December 11; died in New York, April 26. In 1829 she was married to A. W. Lozier; in 1849 began the study of medicine, and in 1853 was graduated from the Syracuse Medical College. She entered practice in New York, and there had great success as a surgeon. The New York medical college and hospital for women was founded through her efforts, and for many years she was a professor in that institution and dean of its faculty. She was also for four years president of the National Woman Suffrage Society. She was a prominent woman suffragist and active in reform and philanthropic movements.

LUDWIG, KARL FRIEDRICH WILHELM (1816-95). A Ger-

man physiologist; born at Witzenhausen, Hesse, December 29. He was appointed professor of comparative anatomy at Marburg in 1846; professor of physiology at Zürich (1849-55); at Vienna (1855); and at Leipsic (1865). His investigations in anatomical physiology place him in the front rank of that department of science. His chief work is *Lehrbuch der Physiologie des Menschen* (1852-55); but his *Arbeiten aus der Physiologischen Anstalt zu Leipzig* and his essays contain valuable contributions to physiology. He died April 25.

LUSK, WILLIAM THOMPSON (1838-97). An American phy-

sician and surgeon. He was born at Norwich, Conn., May 23; remained one year at Yale, and then went to Heidelberg and Berlin to study medicine (1858-61); served in the Union army from 1861 to 1863; received his M.D. from Bellevue Hospital Medical College in 1864; pursued post-graduate studies in Edinburgh, Paris, Vienna, and Prague; returned to New York City in 1865 and began practising, making a specialty of obstetrics and diseases of women; was successively lecturer on physiology at Harvard (1871); professor of obstetrics and diseases of women in Bellevue Hospital Medical College (1871); and visiting physician at the same hospital (1871); co-editor of the

New York Medical Journal (1871-72). His most important book, *The Science and Art of Midwifery* (1882), has gone through many editions in several languages.

LUYS, JULES BERNARD (1828-95). French physician; born in Paris, August 17; and received his M.D. from the Paris School of Medicine in 1857. He was city hospital physician in 1862; physician-in-chief of the Ivry Sanatorium and was elected a member of the Academy of Medicine in 1871. He made a specialty of the study and cure of nervous diseases, and diseases of the brain. His leading works include *Recherches sur le Système Nerveux Cérébro Spinal* (1864, with 40 folio pages of drawings from life); *Inconographie Photographique des Centres Nerveux* (1872-74; illustrated); *Études de Physiologie et de Pathologie Cérébrale* (1874); *Le Cerveau et ses Fonctions* (3d ed. 1878; illustrated); *Traité Clinique et Pratique des Maladies Mentales*, received the Lallemand prize by the Academy of Medicine (1881); *Hypnotisme Experimental* (1890).

LUZENBERG, CHARLES ALOYSIUS (1805-58). American physician; born at Verona, Italy. Leaving Italy for the United States in his 14th year, he subsequently received a medical education at Jefferson Medical College of Philadelphia. He removed to New Orleans in 1829, where he made a reputation for brilliant surgery and was enabled to establish the famous New Orleans Medical School. He visited Paris in 1832, where his reputation had preceded him, and he was elected corresponding member of the Paris Academy. His most important work in Louisiana, where he took up his residence again in 1834, was the founding of the Society of Natural History (1839), and the Louisiana Medico-Chirurgical Society (1843) by which science has been much fostered and promoted in the South.

M

MacCULLOCH, JOHN (1773-1835). Geologist; born in Guernsey, October 6, studied medicine at Edinburgh, and became an army surgeon. In 1811 he was employed in geological researches in Scotland; in 1820 became physician to Leopold of Saxe-Coburg (king of the Belgians); and was finally professor of Chemistry and Geology at Addiscombe. He died August 21. He wrote *Description of the Western Islands of Scotland* (1819); *Geological Classification of Rocks* (1821); *System of Geology* (1831); *Malaria* (1827), and *Remittent and Intermittent Diseases* (1828).

M'GRIGOR, SIR JAMES (1771-1858). An army surgeon;

knighted in 1814. He was born at Cromdale, Inverness-shire, and died in London. See his unfinished *Autobiography* (1861).

McHENRY, JAMES (1785-1845). American physician and author; born at Larne, Ireland, December 20; died there, July 21. He was educated in Dublin and Glasgow, and in 1817 emigrated to the United States and finally settled in Philadelphia, where he practised medicine and was engaged in mercantile business. In 1842 he was appointed United States counsel at Londonderry, and held that post until his death. Among his works are: *The Usurper: an Historical Tragedy* (played in Philadelphia, 1820); *O'Halloran, or the Insurgent* (1824); *The Betrothed of Wyoming* (2d ed. 1830); etc.

McCLELLAN, GEORGE (1796-1847). Surgeon; born at Woodstock, Conn., December 23, died in Philadelphia, Pa., May 9. He was graduated at Yale in 1816. A fondness for natural science, developed under the influence of the elder Silliman, led him to adopt medicine as his profession, and he began his studies in New Haven under Dr. Thomas Hubbard, but was graduated at the medical department of the University of Pennsylvania in 1819. Even before he obtained his degree, he was elected resident physician to the hospital of the Philadelphia almshouse. During his first year of practise he performed the most important operations in surgery, such as lithotomy, extraction of the lens for cataract, and extirpation of the lower jaw. He opened a dissecting-room, and gave private courses of lectures, both on anatomy and surgery, and his class soon became so numerous as to require a larger room for their accommodation. His success was so great that he conceived the idea of founding a medical college, and with others he obtained from the legislature of Pennsylvania, in 1825, a charter for Jefferson Medical College. In 1826 he began his public lectures, as professor of surgery in the new college, which, notwithstanding the opposition of the profession, and difficulty in obtaining a faculty, grew so rapidly that in ten years the students numbered 360. In 1838 the faculty was reorganized, but without Dr. McClellan's name, and this action led to his immediately procuring the incorporation of the medical department of Pennsylvania college. His lectures in connection with the new institution began in November, 1839, and continued until the spring of 1843. He was the originator of the extended system of medical education as it now exists in this country, and the clinical instruction of the college was originated by him. He ac-

quired one of the largest practises known in the United States, and his reputation extended to Europe, while he attracted patients from all parts of this country, the West Indies, and South America. As a surgeon, he performed almost every capital operation known, together with many others that were original with himself. He was specially eminent in ophthalmic surgery and for his operations for cataract and other diseases of the eye, and he was among the first to extract the lens. Other operations, now quite common, were not used in the United States until performed by him, and he shares with Valentine Mott, of New York, and John C. Warren, of Boston, the credit of establishing many procedures new in this country. He did more than any other surgeon, by the number and success of his operations, to establish completely, as safe and feasible, the removal of the parotid gland.

MACKENZIE, SIR MORELL (1837-92). An English physician and specialist on throat diseases. He was born at Leytonstone, Essex, July 7, and educated at the London University, in Paris, and in Budapest, where he met Czermak, the Bohemian physiologist, who showed him the use of the laryngoscope, which Mackenzie later introduced into London. He returned to England, and in 1863 founded the Hospital for Diseases of the Throat, Golden Square; in the same year he obtained the Jacksonian prize from the Royal College of Surgeons for his essay on diseases of the larynx. He was soon afterward elected assistant physician to the London Hospital, becoming, in 1873, head physician, and was appointed lecturer on diseases of the throat, which position he held until his death. He was a corresponding member of the Imperial Royal Society of Physicians of Vienna, and of the Medical Society of Prague, and an honorary fellow of the American Laryngological Association. Dr. Mackenzie was the author of numerous publications on laryngological subjects; among them, a systematic treatise, in two volumes, on *Diseases of the Throat and Nose* (1880) and *The Hygiene of the Vocal Organs* (1886). He was knighted in 1887 by Queen Victoria, for his services in prolonging the life of the late Emperor Frederick of Germany. He died in London, February 13.

MADDEN, RICHARD ROBERT (1798-1886). An Irish doctor, who traveled much, and wrote much. See *Memoirs* by his son (1891).

MAGENDIE, FRANÇOIS (1783-1855). French physiologist and physician; born at Bordeaux. He became prosector in anatomy (1804), physician to the Hôtel-Dieu in Paris, and

professor of Anatomy in the Collège de France (1831). He made important additions to our knowledge of nerve-physiology, the veins, and the physiology of food, and wrote numerous works, including the *Elements of Physiology*. In his *Journal de la Physiologie Expérimentale* are recorded the experiments on living animals, which gained for him the character of an unscrupulous vivisector. (*Mazhongdcé.*)

MALPIGHI, MARCELLO (1628-94). Italian anatomist, was professor at Pisa, Messina, and Bologna, and from 1691 chief physician to Pope Innocent XII. A pioneer in microscopic anatomy, animal and vegetable, he wrote a series of works on his discoveries.

MANDEVILLE, BERNARD (1670-1733). Satirist; born at Dort in Holland; he took his M.D. at Leyden in 1691, and immediately settled in London in medical practise, and died there. He is known as the author of a short work in doggerel verse originally entitled *The Grumbling Hive* (1705), and finally *The Fable of the Bees* (1723). Writing in a vein of acute paradox, he affirms that "private vices are public benefits," and that every species of virtue is at bottom some form of gross selfishness, more or less modified. The book was condemned by the grand jury of Middlesex, and was attacked by Law the nonjuror, by Berkeley, Brown, Warburton, Hutcheson, and others. Other works in an unpleasant tone are *The Virgin Unmasked*, *Free Thoughts on Religion*, etc.

MANTELL, GIDEON ALGERNON (1790-1852). Palæontologist; born at Lewes, practised as a doctor there and at Brighton, Clapham, and London, where he died. He wrote 67 works and memoirs, most geological. Very important were his investigation of the Wealden fossils and his discovery of four great dinosaurians.

MARCET, JANE, née HALDIMAND (1769-1858). Born at Geneva, the daughter of a rich Swiss London merchant, in 1799 she married Alexander Marcet (1780-1822), a Genevan, who had just started a medical practise in London, and became lecturer on chemistry at Guy's Hospital. Besides *Conversations on Chemistry* (1806; 16th ed. 1853), through which Faraday made his first acquaintance with the subject, she wrote *Conversations on Political Economy* (1816; 7th ed. 1839), which was warmly praised by J. B. Say, MacCulloch, and Lord Macaulay; *Conversations on Natural Philosophy* (1819; 14th ed. 1872), and similar books on botany, vegetable physiology, etc., besides really charming *Stories for very Little Children*. See Harriet Martineau's *Biographical Sketches* (1869).

MARTIN, HENRY AUSTIN (1824-84). American surgeon; born at London, July 23; died in Boston, December 7. He came to the United States at an early age and was graduated from the medical school at Harvard in 1845, when he established a practise in Boston. He served as a surgeon until nearly the close of the Civil War, when he resigned and was brevetted lieutenant-colonel for gallant service. He devoted his attention principally to surgery and to the treatment of smallpox, upon which subject he was a generally recognized authority. He was the originator of many important innovations in the field of surgery and published valuable professional articles in periodicals. He was a member of the International Medical Congress, held at London in 1881, where he delivered a paper explaining a method of treatment which he had originated and which commanded much favorable attention.

MAYER, JULIUS ROBERT VON (1814-78). Physicist; born at Heilbronn, November 25; studied medicine at Tübingen, Munich, and Paris, and settled as physician in his native town in 1841. In 1842 he published a preliminary statement of the mechanical theory of heat (worked out independently by Joule), and in 1845 restated his views with a great wealth of illustration, forecasting also the meteoric origin of the sun's heat. He was ennobled by the king of Württemberg two years before his death, on March 20. Mayer's papers are collected as *Mechanik der Wärme* (2d ed. 1874), and his *Correspondence* appeared in 1889. See *monographs* by Dühning (1879) and Weyrauch (1889).

MEAD, RICHARD (1673-1754). An English physician. He was born at Stepney, and at an early age entered the university at Utrecht. After three years study he went to Leyden, where he entered upon the study of medicine under the noted professors, Pitcairne and Hermann. Having taken his degree of doctor of philosophy and physics, he returned to Stepney and began the practise of his profession in 1696. In 1703 Dr. Mead was made a member of the Royal Society, and a lecturer at St. Thomas' Hospital. His reputation both as a practitioner and as a writer on medical subjects was very great, and he was in constant correspondence with the most eminent scientists of the day in his own and foreign countries. He received the appointment of physician-in-ordinary to George II., and in 1716 was elected a fellow of the College of Physicians. In addition to his acquirements as a physician, Dr. Mead devoted much time to the study of natural history, antiquarianism, and numismatics. He was an intimate friend of Bently, Pope, and Johnson. His

works were first published in Latin, and subsequently translated into English, French and Italian. They include *A Mechanical Account of Poisons* (1702) and *Monita et Præcepta Medica* (1751).

MESMER, FRIEDRICH ANTON or Franz (1734-1815). The founder of mesmerism; born near Constance, May 23. He was bred for the priesthood, but studied medicine at Vienna, and about 1772 took up the opinion that there exists a power of extraordinary medicinal influence on the human body, which he called animal magnetism. In 1778 he went to Paris, where he created a great sensation. He refused an annual pension of 20,000 livres to reveal the secret; but in 1785 a commission of physicians and scientists (Bailly, Franklin, Lavoiser, etc.) reported on him unfavorably. He fell into disrepute, and after a visit to England, spent the rest of his life in obscurity at Meersburg in Switzerland. He died March 5. See *Life* by Kerner (Frankf. 1856), and Graham's *Mesmer the Magnetiser* (1890).

MEYER, LOTHAR JULIUS (1830-95). A German chemist. He was born in Varel, Oldenburg; studied medicine in Zurich and Würzburg, and chemistry at Heidelberg, where in 1857, he made the discovery, by a simple analysis, that the taking up of oxygen by the blood is not accomplished by the air, but results from the chemical affinity between oxygen and the coloring matter of the blood. This view, published in *Die Gase des Blutes* (1857), was supplemented by the study of *De Sanguine Oxydo Carbonico Infecto* (1858). In 1859 he became professor in the chemical laboratory in Breslau; in 1866 he became professor at Eberswalde; and in 1868 at Karlsruhe, whence in 1876 he went to Tübingen. Meyer wrote, besides some important monographs on educational methods, *Die modernen Theorien der Chemie* 1864; 6th ed., partially, 1896), and *Die atomgewichte der Elemente* (with Seubert, 1883).

MILLER, EDWARD (1760-1812). An American physician; born in Dover, Del.; he graduated at the medical department of the University of Pennsylvania in 1784, and in 1797, associated with Dr. Samuel L. Mitchell and Elihu H. Smith, he founded the *Medical Repository*, the American journal of medicine. He was professor of medicine in New York, and enjoyed a high reputation both in this country and abroad. His writings, with a *Memoir* by his brother, Samuel Miller, were published in New York in 1814.

MITCHELL, JOHN (?-1768). An Anglo-American physician. He settled at Urbana, Va., about 1700, and gained recognition as a botanist. It was after him that the

Mitchella repens was named by Linnæus. He wrote, among various works: *Nova Plantarum Genera* (1741); and an *Essay on the Causes of Different Colors of People in Different Climates* (1744); but his name is best known in connection with *A Map of the British and French Dominion in North America* (1755), which was credited to him and was once standard.

MITCHELL, JOHN KEARSLEY (1798-1858). An American physician; born at Shepherdstown, Va. He went to Scotland as a child and studied in Ayr and Edinburgh. After his return to the United States he graduated at the medical college of the University of Pennsylvania in 1819. Before he settled in Philadelphia, in 1822, as general practitioner, he made three voyages to the Far East as ship's surgeon. In 1826 he became professor of medicine and physiology at the Philadelphia Medical Institute, and in 1833, professor of chemistry at the Franklin Institute. From 1841 to 1858 he was professor of the theory and practise of medicine in Jefferson Medical College. Besides contributions to scientific and medical periodicals his works include: *Saint Helena, A Poem by a Yankee* (1821); *On the Wisdom, Goodness and Power of God as Illustrated in the Properties of Water* (1834); *Indecision, a Tale of the Far West, and Other Poems* (1839); *On the Cryptogamous Origin of Malarious and Epidemic Fevers* (1849); and the posthumous *Five Essays of Various Chemical and Medical Subjects* (1858) brought out by his son, S. Weir Mitchell.

MITCHELL, SAMUEL LATHAM (1764-1831). A scientist of universal attainments. He was born in North Hempstead, Long Island, N. Y., August 20; studied medicine in Hempstead and graduated at the University of Edinburgh; on his return, studied law; in 1790 he was elected to the New York legislature, and in 1792 became professor of chemistry and natural philosophy at Columbia College, New York City. In 1794 he made a mineralogical survey of the State of New York, and in 1797 was one of the founders of the *Medical Repository*, which he edited for sixteen years. In 1798, in the face of strong opposition, he advocated granting to Robert R. Livingston and Robert Fulton exclusive steam-navigation rights, and was one of the party making the first trip in the "Clermont" in 1807. In 1801 he retired from his college professorship, and from December 1, 1801, until November 22, 1804, served as a Democrat representative in Congress. Thereafter he was appointed to fill a vacancy in the United States Senate, and held that office until March 3, 1809. From 1820 to 1826 he was pro-

essor of botany and *materia medica* in the New York College of Physicians and Surgeons; became connected with various learned societies, corresponded with Joseph Priestley, and for his researches on fishes won the approbation of Cuvier. He made numerous contributions to scientific periodicals, including *The London Philosophical Magazine*; *The New York Medical Repository*; and *The American Mineralogical Journal*. He died in New York City, September 7.

MOLESCHOTT, JAKOB (1822-93). Physiologist; born at Bois-le-Duc in Holland, August 9; studied medicine at Heidelberg, and taught there physiology, anatomy, and anthropology from 1847 until 1854, when he resigned, the university having "warned" him on account of the materialistic tendency of his writings. In 1856 he became professor of Physiology at Zurich, in 1861 at Turin, and in 1878 at Rome, where he died May 20. He wrote some twenty works, in German and Italian, including one on the *Natural History of Man and Animals* (1855). See his autobiographical *Für meine Freunde* (1894).

MOORE, JOHN (1729-1802). Born at Stirling, England, a minister's son, studied medicine and practised in Glasgow, traveled with the young Duke of Hamilton (1772-78), and then settled in London. His *View of Society in France, Switzerland, Germany, and Italy* (1779-81) was well received; but the novel *Zeluco* (1789), which suggested Byron's *Childe Harold*, is to-day the least forgotten of his works. These include two other novels, *Medical Sketches*, and books on the French Revolution. Moore died at Richmond. See *Memoir* by Anderson prefixed to his works.

MOOS, SALOMON (1831-95). German aurist. He was born at Randegg, Baden, July 15, studied at Heidelberg, Prague and Vienna, and in 1859 became private docent at Heidelberg and in 1866 professor of aural surgery there. His most valuable researches were in relation to the diseases of the labyrinth of the ear, and he was the first to demonstrate that in certain infectious diseases, micro-organisms within the ear labyrinth cause derangement of hearing and equilibrium. He wrote *Klinik der Ohrenkrankheiten* (1866); *Anatomie und Physiologie der Eustachischen Röhre* (1874); *Über Meningitis cerebro-spinalis Epidemica* (1881); *Über Pilzinzivasion des Labyrinths im Gofolge von einfacher Diphtherie* (1887), and *im Gefolge von Masern* (1888); *Histologische und bakterielle Untersuchungen über Mittelohrerkrankungen bei den verschiedenen Formen Diphtherie* (1890). He

also founded and edited with Knapp the *Zeitschrift für Ohrenheilkunde*.

MORTON, SAMUEL GEORGE (1799-1851). American anatomist; born at Philadelphia January 26; he died there May 15. He studied medicine at the University of Pennsylvania and in Edinburgh; began to practise in Philadelphia in 1824; was immediately prominent in the Academy of Natural Sciences, being its secretary in 1825 and its president in 1850. He became professor of anatomy in Penn College in 1839; and made special studies of ethnology, craniology and plant physiology. His valuable collection of skulls, numbering 1,500 specimens (900 human), led him to urge the diverse origin of the human race. He contributed to *Silliman's Journal*, and published *Crania Americana* (1839); *Crania Egyptica* (1844); and *Illustrated System of Human Anatomy* (1849).

MOTT, VALENTINE (1785-1865). An eminent American surgeon; born on Long Island, N. Y., August 20; he graduated at Columbia College; studied under Sir Astley Cooper in London, and also spent a winter in Edinburgh. After acting as demonstrator of anatomy he was appointed professor of surgery in Columbia College in 1809. From 1811 to 1834 he was in very extensive practise as a surgeon, and most successful as a teacher and operator. He tied the innominate artery in 1818; the patient living twenty-six days. He performed a similar operation on the carotid, forty-six times with good results; and in 1827 he was also successful in the case of the common iliac. He is said to have performed 1,000 amputations and 165 lithotomies. After spending seven years in Europe (1834-1841), Mott returned to New York and founded the university medical college of that city. He translated Velpeau's *Operative Surgery*, and was foreign associate to the Imperial Academy of Medicine of Paris. His death occurred April 26.

MULDER, GERADUS JOHANNES (1802-80) Dutch chemist and physician; born at Utrecht, Holland, December 27, and died there in April. He was educated at the University of Utrecht and became professor of botany and chemistry there (1840-68), but first practised medicine in Amsterdam for some years. He was also for a short time professor of chemistry at Rotterdam. He became known chiefly through his researches on the proteids, and advanced the belief in a hypothetical substance which he called protein. This he believed to be the essential nitrogenous constituent of food, existing in animals, and derived ready-formed from plants and vegetables. The publication of this theory in-

volved Mulder in a controversy with Liebig, who from the first doubted the existence of protein as an independent chemical compound. The whole theory has been abandoned and the word protein is now used to indicate the first element in compounds. His principal work, *Chemistry of Vegetable and Animal Physiology* has been translated into English by Fromberg, and his *Chemistry of Wine*, by Bence Jones. He also wrote: *Chemical Researches; De Voeding in Nederland; De Voeding van den Neger in Suriname*; and his posthumous autobiography *Levensschets* (1881 2d ed. 1883).

MULLER, JOHANNES (1801-58). German physiologist and morphologist; born at Coblenz, July 14, died in Berlin, April 28. After studying anatomy and zoölogy at Bonn and Berlin, he became professor of physiology and anatomy at Bonn, and afterward succeeded Rudolphi at Berlin. Here he also edited the *Archiv für Anatomie, Physiologie und Wissenschaftliche Medicin*. He remained in Berlin until his death. Müller possessed one of the greatest scientific minds of the nineteenth century; and his remarkable powers of application, acuteness, and penetration led him into wide fields of research, where he succeeded in making most valuable observations. He is regarded as the founder of modern physiology. He summed up work of his predecessors, instituted new methods of experimental and microscopic investigation, and carried out and recorded valuable observations in connection with the mechanism of sight, hearing, and voice. He contributed to the foundation of Bell's law and principles of reflex action and other nervous movements. He further elucidated the chemical and physical properties of chyle, lymph, and bile, and studied in an original and fruitful way the phenomena of the glands and the quality of glandular secretions. To Müller physiology owes the knowledge of chondrin. His *Handbuch der Physiologie des Menschen* (1833-40; Eng. trans. 1840-49) exercised great influence as a text-book. Müller counted among his pupils such as Helmboltz, Vierordt, Du Bois-Reymond, etc. He was also a student of comparative anatomy, and was the founder of the new morphology. He greatly enriched the subject of comparative embryology, and was the first to explain the real nature of hermaphroditism. He also discovered the pronephric ducts, which bear his name. Among his important publications is his *Systematische Beschreibung der Plagiostomen* (1841); and in zoölogy, the *System der Asteriden* (1842), in collaboration with Troschel, and *Horæ Ichthyologicaæ*. He also published many articles in the *Transactions of the Berlin Academy of Sciences*. Consult:

Virchow, *Johannes Müller, Eine Gedächtnisrede* (1858); Bischoff, *Ueber Johannes Müller und sein Verhältnis zum jetzigen Standpunkt der Physiologie* (1858); *Proceedings of the Royal Society of London* (vol. IX, p. 556).

MUNDE, PAUL FORTUNATUS (1846-1902). American gynecologist. He was born at Dresden, Saxony, September 7, and died in New York, February 7. After coming to the United States in 1849 he attended the Boston Latin school and then studied medicine at Yale. He left before completing his course, entering the Union army as medical cadet in 1864. He was afterward graduated from the Harvard Military school in 1866, and went to Germany, where he enlisted in the Bavarian army. He was decorated with the Iron Cross by the emperor, for heroism in saving the lives of patients from a burning hospital near Paris. After devoting himself to study and practise in hospitals in Berlin, Heidelberg, Paris, London, and Edinburgh, he took up his residence in New York in 1873, and practised obstetrics and gynecology. He was appointed professor at Dartmouth Medical College, and in the New York Polyclinic in 1882. He edited (1874-92) the *American Journal of Obstetrics*, and was president of the American Gynecological Society in 1897-98. Among his works are: *Obstetric Palpitation* (1880); *Minor Surgical Gynecology* (1880); *Appendix to the Midwifery of Cazeaux and Tamier* (1884); *Pregnancy and the Puerperal State* (1887); and *Diseases of Women* (1891).

MURCHISON, CHARLES (1830-79). A Scotch physician; born on the island of Jamaica, he was educated at the universities of Aberdeen, Edinburgh, Dublin, and Paris. In 1853 he entered the East India Company's military service, but soon after reaching India was appointed professor of chemistry at the Calcutta Medical College. In 1855 he published two valuable papers on *The Climate and Diseases of Burmah*. The same year he returned to Europe and settled in London, where he was connected with a number of the leading hospitals. He published the important *Treatise on the Continued Fevers of Great Britain* (1862).

MUSPRATT, JAMES SHERIDAN (1821-71). A British chemist. He was born at Dublin, Ireland, March 8; in 1837 he was appointed chemist for an English manufacturing company, and afterward studied at Giessen, Germany. He is best known in the scientific world for his investigations in ethyl and his discoveries in organic chemistry. He published *Outlines of Qualitative Analysis* (1849); *Dictionary of Chemistry* (1854); and a translation of the

Blowpipe, by Plattner (1844). He died at West Derby, England, February 3.

MUSSEY, REUBEN DIMOND (1780-1866). American surgeon; born at Pelham, N. H., June 23, he died in Boston, June 21. He was graduated at Dartmouth in 1803; studied medicine at the University of Pennsylvania; practised in Salem, Mass.; taught in the Dartmouth medical school (1814-20 and 1822-38), at Bowdoin (1833-35), at Ohio Medical College (1837-50), and at Miami Medical College, which he founded (1851-58); and spent the last eight years of his life in practise in Boston. He was a famous operator, the first to remove the shoulder blade, or to tie both carotid arteries, and successful in his operations for stone, for removing ovarian tumor, for strangulated hernia, and in subcutaneous deligation in varicocele. Mussey wrote *Health; Its Friends and Its Foes* (1862).

N

NELATON, AUGUSTE (1807-73). French physician and surgeon; born June 17; died in Paris, September 21. He studied medicine at Paris under Dupuytren, and was graduated 1836. Soon after he was appointed hospital surgeon and private lecturer in the faculty of medicine in the University of Paris. In 1851 he was appointed professor of clinical surgery, an office which he held until 1867, when he retired. In 1868 he was raised to the dignity of senator. Nélaton was equally distinguished as a professor and as an operator, and invented "Nélaton's probe," used in military surgery in locating bullets. His chief publication is his *Eléments de Pathologie chirurgicale* (1844-60; 2d ed. 1868-85), a work of great value, in which several of his pupils took part.

NELSON, WOLFRED (1792-1863). Canadian physician; born at Montreal, Canada, July 10; died there June 17. He was a surgeon in the British army in the War of 1812, but in 1837 he headed the rebellion decided upon in the meeting of the "Four Countries." He was captured and sentenced to imprisonment for life in the Bermudas, but the sentence was declared illegal and he was liberated. He lived in the United States 1838-42, when he returned to Montreal and was twice chosen mayor of that city. He also served as president of the medical board and College of Surgeons of Lower Canada.

NIEMEYER, FELIX VON (1820-71). German physician. He was grandson of the poet and theologian, August Hermann

Niemeyer; born at Magdeburg, December 31, died in Tübingen, March 14. He was educated at Halle; practised in Magdeburg (1844-55); was professor of pathology and therapeutics at Greifswald, and from 1860 at Tübingen; was military surgeon during the Franco-Prussian war; was ennobled for his services to the king of Württemberg; and wrote a *Text-Book of Special Pathology and Therapeutics* (1858), often republished and distinctly valuable.

NOTT, JOSIAH CLARKE (1804-73). American ethnologist and physician; born at Columbia, S. C., March 24, and died in Mobile, Ala., March 31. In 1824 he was graduated from the South Carolina College and from the medical school of the University of Pennsylvania in 1827. After further study abroad he established himself in Mobile, and in 1858 founded a medical school there. During the Civil War he was for a time on the staff of the Confederate General Bragg. With G. R. Glidden he wrote *Types of Mankind* (1850), and *Indigenous Races of the Earth* (1857), the purpose of which was to oppose the theory of the unity of mankind. He was sole author of *The Connection Between the Biblical and Physical History of Man* (1849); *The Physical History of the Jewish Race* (1850).

NUSSBAUM, JOHANN NEPOMUK (1829-90). German surgeon. He was born at Munich, Bavaria, September 2, and died there October 31. He studied in Munich, Würzburg, Berlin and Paris, and in 1860 became a professor at the University of Munich. He published *Die Pathologie und Therapie der Ankylosen* (1862); *Die Verletzungen des Unterleibs* (1880); *Ueber Chloroformwirkung* (1885), etc.

O

OERTEL, MAX JOSEPH (1835-97). A German physician; specialist in diseases of the lungs and heart. He was born at Dillingen, studied at Munich, and in 1867 became docent of laryngology there, from which post he was promoted to a professorship in 1876. Oertel discovered the bacillus of diphtheritis in 1868, but is better known for his system of hill-climbing as a cure for faulty respiration or circulation. A device for examining the larynx, the laryngostroboscope, is one of his inventions. He contributed to Ziemsen's *Handbuch der speziellen Pathologie und Therapie*, Liebreich's *Encyclopädie der Therapie*, and other encyclopædic works. His most famous work is *Allgemeine Therapie der Kreislaufstörungen* (1884); besides he wrote: *Ueber den laryngologischen Unterricht* (1878); *Ueber Terrainkurorte*

zur Behandlung der Kreislaufstörungen (1887); *Pathogenese der epidemischen Diphtherie* (1887); *Massage des Herzens* (1889); and *Das Laryngostroboskop und seine Verwendung in der Physik, Physiologie und Medizin* (1895).

OKEN, LORENZ (1779-1851). Naturalist. In 1807 he became professor of Medicine at Jena, and in 1816 issued a journal called *Iris*, which led to government interference and his resignation. In 1828 he obtained a professorship at Munich, and in 1832 at Zurich. His system was a transcendental nature-philosophy, fertile in ideas. He developed the theory, now exploded, that the skull is a modified vertebra. See works by Ecker (1880), and Guttler (1884).

OLBERS, HEINRICH WILHELM MATTHAUS (1758-1840). Physician and astronomer, who practised medicine at Bremen. He calculated the orbit of the comet of 1779; discovered the minor planets Pallas (1802) and Vesta (1807); in 1781 rediscovered the planet Uranus; discovered five comets; and invented a method for calculating the velocity of falling stars. He died March 2. See his *Life* prefixed to his works by Schilling (3 vols. 1894-97).

O'MEARA, BARRY EDWARD (1778-1836). An English physician. He was born in Ireland; and died in London June 3. He was household physician to the Emperor Napoleon I at Saint Helena and published *Napoleon in Exile* (1822). Originally a surgeon in the British navy, he was serving on the Bellerophon in that capacity August 7, 1815, when Napoleon went on board. Napoleon noting O'Meara's skill and knowledge of Italian, desired the surgeon to accompany him to Saint Helena. Having obtained Admiral Keith's permission, O'Meara remained with the ex-emperor until July, 1818. He was then recalled and deprived of his rank for having accused Sir Hudson Lowe before the admiralty of cruel and arbitrary conduct.

OPPOLZER, JOHANN VON (1808-71). An eminent Austrian physician. He was born at Gratz, Bohemia, and studied medicine in Prague, where he practised for some time and in 1841 became professor in the medical clinic. For two years he was professor of special pathology and therapy in Leipzig, and in 1850 was called to the university at Vienna, where his name contributed much to the fame of the medical faculty. He was widely known as a clinicist and for his opposition to "nihilism" in therapeutics. His *Klinische Vorträge* (1866-72) was edited by Stoffella.

ORFILA, MATHIEU JOSEPH BONAVENTURE (1787-1853). Founder of toxicology; born at Mahon in Minorca, April

- 24, he studied at Valencia, Barcelona, and Paris. In 1811 he lectured on chemistry, botany, and anatomy. In 1813 appeared his celebrated *Traité de Toxicologie Générale*. In 1819 he became professor of medical jurisprudence, and in 1823 of chemistry. He died March 12. Other works were on medical chemistry (1817) and on forensic medicine (1825).
- ORIBASIUS**, (326-403 A. D.). Greek medical author, and physician to Julian the Apostate; he was born at Pergamus or Sardis.
- OTIS, FESSENDEN NOTT** (1825-1900). American surgeon; born at Ballston Spa, N. Y., May 6; he died May 24. He was graduated from the New York Medical College in 1852; was surgeon of the New York police department in 1861; lecturer on genito-urinary diseases at the New York College of Physicians and Surgeons 1862-71, and clinical professor there from the date last named. Among surgical instruments invented by him may be cited the urethrometer and the dilating catheter. He published *History of the Panama Railroad and the Pacific Mail Steamship Company* (1849); *Urethral Strictures* (1877); *Genito-Urinary Diseases* (1883).
- OTIS, GEORGE ALEXANDER** (1830-81). An American military surgeon. He was born at Boston, Mass.; graduated at Princeton in 1849, and in medicine at the University of Pennsylvania in 1851. In September, 1861, he was appointed surgeon of the Twenty-seventh Massachusetts Volunteers. With them he served until 1864, when he was appointed surgeon of United States Volunteers, and was assigned to duty as curator of the Army Medical Museum and custodian of the Division of Surgical Records at Washington. On the conclusion of peace he accepted an appointment as assistant-surgeon in the medical corps, and continued his duties at the museum, which, owing to his zeal and energy, came to possess the most valuable surgical and anatomical collection in the world. He compiled the surgical volumes of the *Medical and Surgical History of the War* (1870-81), contributed frequently to medical publications, and for three years edited the *Richmond Medical Journal*. Among his writings are *Excision of the Head of the Femur for Gunshot Injury* (1869); and *Amputation of the Hip-Joint in Military Surgery* (1867).
- OWEN, SIR RICHARD** (1804-92). Zoologist; born at Lancaster, July 20, he studied medicine at Edinburgh and St. Bartholomew's; became curator in the museum of the Royal College of Surgeons, where he produced a marvelous series

of descriptive catalogues; and in 1834-55 he lectured as professor of comparative anatomy, for two years at St. Bartholomew's, and afterwards at the College of Surgeons. Meanwhile he helped to give new life to the Zoological Society of London, and was a commissioner of health (1843-46), and for the Great Exhibition of 1851. In 1856 he became superintendent of the natural history department of the British Museum, but continued to teach at the Royal Institution and elsewhere. F.R.S. (1834), president of the British Association (1857), Associate of the French Institute (1859), C.B. (1873), K.C.B. (1883), recipient of many scientific medals, degrees, and honorary titles from many nations, he gained the immortality of a true worker, and died December 18. Owen's anatomical and palæontological researches number towards four hundred, and concern almost every class of animals from sponge to man. He greatly advanced morphological inquiry by his clear distinction between *analogy* and *homology*, and by his concrete studies on the nature of limbs, on the composition of the skull, and on other problems of vertebrate morphology; while his essay on *Parthenogenesis* was a pioneer work. A pre-Darwinian, he maintained a cautious attitude to detailed evolutionist theories. See *Life* by his grandson (1894).

P

PAGET, SIR GEORGE EDWARD (1809-1892). A British physician. He was born at Yarmouth, England; was educated at the Charterhouse and at Cambridge; took his B.A. degree in 1831; became Fellow of Caius in 1832; M.D. in 1838. In 1872 he was appointed regius professor of physics in Cambridge, and was knighted in 1885. He may well be regarded as a public benefactor, he having taken the principal part in the great advance that has been made in medical education. He died January 29.

PAGET, SIR JAMES, BART. (1814-99). A British physician; born at Yarmouth, January 11, he studied at St. Bartholomew's Hospital, London; became a member of the Royal College of Surgeons in 1836; honorary fellow in 1843; member of the council in 1865; president of the college in 1875; Croonian lecturer (heart) in 1857; delivered the Hunterian oration in 1877; Bradshawe lecturer in 1882; Morton lecturer (cancer) in 1887; sergent-surgeon to the queen, surgeon to the Prince of Wales and consulting surgeon to St. Bartholomew's Hospital. He was created a baronet in 1871, and in the same year received the degree of LL.D.

from the University of Edinburgh. Two standard works are *Lectures on Surgical Pathology* and *Clinical Lectures*. He was vice-chancellor of the University of London and a member of the Institute of France (Academy of Sciences).

PAINE, MARTYN (1794-1877). An American physician. He was born at Williamstown, Vt., and in 1813 graduated at Harvard. He was one of the founders of the University Medical College (1841) (now the medical department of the University of New York), where he was a professor from 1841 to 1867. Among his works the best known are: *Cholera Asphyxia of New York* (1832); *Medical and Physiological Commentaries* (1840-44); *Institutes of Medicine* (1847); and a *Review of Theoretical Geology* (1856).

PANAS, PHOTINOS (1832-1903). A French ophthalmologist; born in Cephalonia, Ionian Islands, January 30, he settled in Paris; was naturalized as a citizen, and graduated at the School of Medicine in 1860. He was made associate professor and surgeon to the Central Bureau in 1863; and between this period and 1879 was successively appointed ophthalmic surgeon to the Bicêtre Hospital, the Lourcine, the Midi, the St. Antoine, the St. Louis and the Hôtel Dieu. In 1873 he received the decoration of the Legion of Honor. He published many papers and several books, among which are *Leçons sur le Strabisme, les Paralysies Oculaires* (Paris, 1873), and *Leçons sur les Rétinites* (1878).

PANCOAST, JOSEPH (1805-82). An American surgeon; born in Burlington County, New Jersey, he graduated from the medical department of the University of Pennsylvania in 1828; and in 1831 was instructor in practical surgery in the same institution. Beginning in 1834, he was for eleven years connected with Blockley Hospital, and was also, during the greater part of the same period, professor of surgery in the Jefferson Medical College, exchanging this position for that of professor of anatomy in 1847. He served in this capacity until 1874. He was the author of many innovations in surgery, having succeeded in the formation of a nose by means of plastic sutures in 1841; the formation of eyebrows with strips of scalp; treatment of soft cataract with a fine bent needle; and of restoring the voice by operating upon the soft palate. He contributed to the *American Journal of Medical Sciences*, the *Medical Examiner* and the *Medical Intelligencer*. Among his writings are *Treatise on the Structure, Functions and Diseases of the Human Sympathetic Nerve* (1831); and *Treatise on Operative Surgery* (1844).

PANTALEON, (? -A.D. 305). A Roman saint, physician, and martyr; born, it is supposed, at Nicomedia in Bithynia, he

studied medicine and became special physician to the Emperor Galerius. He was a Christian and was martyred as such. He is the patron saint of physicians, and his feast is kept on July 27.

PARACELSUS, (1493?-1541). Name coined for himself by Theophrastus Bombastus von Hohenheim, son of a physician at Einsiedeln, in the canton of Schwyz; born apparently December 17, went to Basel University at sixteen, studied alchemy and chemistry with Trithemius, Bishop of Würzburg, and next at the mines in Tyrol learned the properties of metals and minerals. In subsequent wanderings he amassed a vast store of facts, learned the actual practise of medicine, but lost all faith in scholastic disquisitions and disputations. He acquired fame as a medical practitioner (1526), was made town physician at Basel, and lectured on medicine at the university, but flouted at Galen and Avicenna, and justified the furious enmities that pursued him by his own vanity, arrogance, aggressiveness, and intemperate habits. A dispute with the magistrates in 1528 drove him from Basel; he wandered for a dozen years, and settled in 1541 at Salzburg, but died September 23, in the same year. Of some 250 works attributed to him, the critics only admit from ten to twenty-four as genuine, the others being by his followers the "Paracelsists." They were mainly written in Swiss-German, and about a dozen were translated into English. The earliest printed work was *Practica D. Theophrasti Paracelsi* (1529). Collected German editions appeared at Basel in 1589-91 and again in 1603-5 (reissued 1618), Latin editions in 1603-5 and 1658. In spite of his attraction to alchemy and mysticism, he made new chemical compounds, and improved pharmacy and therapeutics, encouraged research and experiment, and, in an empirical fashion, revolutionized hide-bound medical methods. See monographs by M. B. Lessing (1839), Marx (1842), Mook (1876), and Kahlbaum (1894), the English *Life* by Fr. Hartmann (1887), and Browning's poem.

PARE, AMBROISE (1517-90). The father of modern surgery; he was born near Laval, in 1536; as surgeon joined the army starting for Italy, and was surgeon to Henry II, Charles IX, and Henry III. He died in Paris. Paré improved the treatment of gunshot wounds, and substituted ligature of the arteries for cauterisation with a red-hot iron after amputation. His *Cinq Livres de Chirurgie* (1562) and other writings exercised a great influence on surgery. See *Lives* by Paulmier (1884) and Stephen Paget (1897).

PARIS, JOHN AYRTON (1785-1856). An English physician

and author. He was born and was educated at Cambridge, where after pursuing courses of study at Edinburgh, he took his medical degree in 1808. He began the practise of his profession in London, was made physician to Westminster Hospital, and later settled in Cornwall. There he obtained a large practise, studied natural history, and founded the Royal Geological Society of Cornwall. Returning to London, he lectured on materia medica and the philosophy of medicine at the Royal College of Physicians. He became a censor of the Royal College of Physicians in 1817; delivered the Harveian oration before it in 1843, and next year succeeded Sir Henry Hallford in its presidency, retaining that office until his death. Among his works are a *Pharmacologia* (1812), long the standard treatise on the subject; a *Treatise on Diet* (1827); *Philosophy in Sport Made Science in Earnest* (1827), a popular treatise on physical science; and a *Life of Sir Humphry Davy* (1831).

PARK, MUNGO (1771-1805). African traveler. He was born September 10, at Foulshiels on the Yarrow, and studied medicine in Edinburgh (1789-91). Through Sir Joseph Banks, he was named assistant-surgeon in the *Worcester*, bound for Sumatra (1792); and in 1795 his services were accepted by the African Association. He learned Mandingo at an English factory on the Gambia, started inland in December, was imprisoned by a chief, but escaping, reached the Niger at Sego in July, 1796. He pursued his way westward along its banks to Bammaku, and then crossing a mountainous country, fell ill, but was ultimately brought by a slave-trader back to the factory again, after an absence of nineteen months. He told his adventures in *Travels in the Interior of Africa* (1799). He married (1799), and settled as a surgeon at Peebles; but the life was repugnant to him, and in 1805 he undertook another journey to Africa at government expense. Again he started from Pisania on the Gambia, with a company of forty-five; but when he reached the Niger he had but seven followers. From Sansanding he sent back his journals and letters in November, 1805, and embarked in a canoe with four European companions. Through many perils and difficulties they reached Bousa, where the canoe was caught on a rock; they were attacked by the natives, and drowned in the fight. An account of Park's second journey was published in 1815. See *Life* by Wishaw, prefixed to the *Journal* of 1815, and Joseph Thomson's *Mungo Park* (1890).

PARKER, PETER (1804-88). A medical missionary and diplomat; born in Massachusetts, he graduated at Yale Col-

lege in 1831; studied theology and medicine at New Haven; was ordained and went to China as a missionary in 1834. He established a hospital at Canton, principally for eye diseases, but soon for other diseases. Dr. Parker possessed great skill, and his fame spread rapidly. War breaking out in 1840 between England and China, the hospital was closed, and Dr. Parker returned to the United States. In 1842 he resigned his connection with the American Board of Foreign Missions and became secretary to the United States legation and interpreter of the new embassy, still having charge of the hospital. In the absence of the minister he acted as chargé d' affairs. In 1855, his health having failed, he again visited the United States, but by request of the Government, he returned the same year to China as commissioner with full power to revise the treaty of 1844. This position he held until a change of administration in 1857, when, his health again failing, he returned to the United States and settled in Washington. He published *Reports of the Ophthalmic Hospital at Canton* (Canton, 1836-52), *Statements Respecting Hospitals in China* (London, 1841); *Notes of Surgical Practise Among the Chinese* (Edinburgh, 1846).

PARKER, WILLARD (1800-1884). An American surgeon; born at Lyndeboro, N. H., September 2. He graduated at Harvard in 1826; became a pupil of Dr. John C. Warren of Boston, and was appointed professor of anatomy in Berkshire Medical College, Pittsfield, Mass., after graduating from the Harvard Medical School in 1830. In 1836 he accepted a similar position in the Medical College of Cincinnati, and in 1839 became professor of surgery in the New York College of Physicians and Surgeons, holding this position for thirty years, when, in 1869, he took the chair of clinical surgery. He established the first college clinic in the United States; in 1854 reported the first cases of malignant pustule and made many valuable discoveries in practical surgery, including the cure of abscess of the *vermiform appendix*. He became president of the New York State Inebriate Asylum in 1865; was member of many professional societies, domestic and foreign; author of many papers on practical surgery, including *Cystotomy* (1850); *Concussion of Nerves* (1856); *Lecture on Cancer* (1873). He died in New York City, April 25.

PARKES, EDMUND ALEXANDER (1819-76). An army doctor and after 1845, a practitioner in London, who wrote largely on physiology, and was the founder of the science of hygiene.

PARVIN, THEOPHILUS (1829-98). An American physician;

born at Buenos Ayres, Argentine republic, S. A., January 9; he graduated at the University of Indiana in 1847, and received his degree of M.D. from the University of Pennsylvania in 1852. From 1864 to 1869 he was professor of obstetrics in the Medical College of Ohio; in the medical department of the University of Louisville till 1872; in the Indiana Medical College till 1883, when he was elected to the same chair in the Jefferson Medical College, Philadelphia. In 1881 he was president of the Indiana State Medical Society, and in 1879 of the American Medical Association; he was also president of the American Academy of Medicine and of the American Gynæcological Society. He published *Science and Art of Obstetrics* (1886, 2d ed. 1890); *Obstetric Nursing* (1889); and edited *Winckel on Diseases of Women*.

PASTEUR, LOUIS (1822-95). Born at Dôle, December 27; studied at Besançon and Paris, and held academic posts at Strasburg, Lille, and Paris, where in 1867 he became professor of chemistry at the Sorbonne. From 1886 he worked at the Pasteur Institute in Paris. His work was at first chemical—as on tartrate crystals and “left-handed” tartrates. He ere long discovered a living ferment—a micro-organism comparable in its powers to the yeast-plant—which would, in a solution of paratartrate of ammonia, select for food the “right-handed” tartrates alone, leaving the “left-handed.” He next showed that other fermentations—lactic, butyric, acetic—are essentially due to organisms, greatly extended Schwann’s researches on putrefaction, gave valuable rules for making vinegar and preventing wine disease, and refuted supposed proofs of spontaneous generation. After 1865 he tackled, with brilliant success, silkworm disease, injurious growths in beer, splenic fever, and fowl cholera. He showed that it was possible to attenuate the virulence of injurious micro-organisms by exposure to air, by variety of culture, or by transmission through various animals. He thus demonstrated by a memorable experiment that sheep and cows “vaccinated” with the attenuated bacilli of splenic fever (or anthrax) were protected from the evil results of subsequent inoculation with the virulent virus; and by the culture of antitoxic re-agents prophylactic treatment of diphtheria, tubercular disease, cholera, yellow fever, and plague, has been found effective. His treatment of hydrophobia depends on similar proofs. A devout Catholic, he died September 28, and was committed to his final resting-place in the Pasteur Institute, December 26, 1896.

PAULUS, ÆGINETA (Seventh Century). A Greek physician;

born in Ægina, and flourished in the 7th century. His *Synopsis of the Medical Art* went through many editions and translations.

PEASLEE, EDMUND RANDOLPH (1814-78). An American physician, known as an obstetrician and gynecologist. He was born in New Hampshire, and graduated from Dartmouth College in 1836, where he remained for two years as tutor. After taking his medical degree at Yale, he began practise in Hanover, N. H., in 1841. In 1842 he became professor of anatomy and physiology at Dartmouth, and he retained this position for nearly forty years. He was also professor at Bowdoin College. He was made professor of physiology and pathology in the New York Medical College in 1851, and in 1858 he assumed the chair of obstetrics and removed to New York City. This college became extinct in 1864. He published *Human Histology* (1857), and *Ovarian Tumors and Ovariectomy* (1872).

PEPPER, WILLIAM (1843-98). An American educator and author. He was born in Philadelphia, August 21; son of Dr. W. Pepper, professor of the theory and practise of medicine in the University of Pennsylvania (1860-64); graduated at the University of Pennsylvania, in the arts department, in 1862; in the medical department in 1864; became lecturer on morbid anatomy (1868-70); clinical medicine (1870-76); professor of the latter (1876-87); of the theory and practice of medicine (1887); provost of the university (1881), resigning in 1894. He was assiduous in his efforts to extend and broaden the scope of the university, and during his office there were added the Wharton school of finance and economy; the department of veterinary medicine; the school of philosophy; the school of biology; the school of American history; the department of archæology and palæontology, and that of hygiene. He was medical director of the Centennial Exposition, receiving for his services in connection therewith the knight commandership of the Order of St. Olaf of Sweden. He was president of the American Association of American Physicians (1891), and of the Pan-American Medical Congress at Washington (1893). He was the founder of *The Medical Times*, editing it the first year of its existence (1870-71). He published, in conjunction with Dr. John F. Meigs, *Diseases of Children* (1870), which went through many editions; and was the author of *Sanitary Relations of Hospitals* (1875); and edited the *System of Medicine by American Authors* (5 vols., 1885-86), which was his chief literary performance. The

list of his contributions to the professional and other journals is a long and important one.

- PEREIRA, JONATHAN** (1804-53). Pharmacologist; born in London, was successively lecturer on chemistry and physician to the London Hospital (1841), and was examiner in materia medica to London University. His books were *Elements of Materia Medica* (1839-40) and treatises on *Diet* and on *Polarised Light* (1843). See *Memoir* (1853).
- PERSOON, CHRISTIAN HENDRIK** (1755-1837). A Dutch physician and botanist; born at the Cape of Good Hope, Africa. He was educated in Holland and practised his profession for a number of years in Germany. He went to Paris about 1802, where he published several interesting works on cryptogamous plants; also, a *Synopsis of Plants* in two volumes. The titles of his principal works are: *Observations Mycologicae* (1796); *Synopsis Methodica Fungorum* (1801); *Incones Pictæ Speciorum Rariorum Fungorum* (1803-08); *Synopsis Plantarum* (2 vols., 1805-07). The Austrian genus *Persoonia* is named in his honor. It embraces about 60 species, some of which are valuable timber trees.
- PETERS, JOHN CHARLES** (1819-93). An American physician; born in New York city; studied medicine in Columbia and in Europe, and commenced practise in New York as a homeopathist, but afterwards joined the regular school. He published treatises on diseases of the head, of females, of the eye, and Asiatic cholera. In connection with Dr. E. F. Snelling and others, he published a *Materia Medica*. Dr. Peters was editor of the *North American Journal of Homeopathy*, and of the *Transactions* of the Pathological Society.
- PETTENKOFER, MAX VON** (1818-1901). German chemist; born December 3; in 1847-94 he was professor of chemistry at Munich. He made valuable contributions to science on gold-refining, gas-making, ventilation, clothing, the influence of soils on health, epidemics, and hygiene generally. Of numerous works by him the best known is his *Handbuch der Hygiene* (1882, *et seq.*).
- PFEUFER, KARL VON** (1806-69). A German physician who introduced the rational method of physical and chemical explanations for physiological and pathological conditions. He was born at Bamberg, and studied medicine at Erlangen and Würzburg. After eight years of practise in Munich, Pfeufer held academic positions in Zurich (1840-44), in Heidelberg (1844-52), and in Munich (1852-69). Besides his great contributions to method, which appeared in the *Zeit-*

schrift für rationelle Medizin (1844 *et seq.*), he wrote on cholera, *Zum Schutz wider die Cholera* (1849, 3d ed. 1854), and introduced public sanitation as a requisite in medical study. Consult Kerschensteiner, *Leben und Wirken des Dr. Karl Von Pfeufer* (Augsburg, 1871).

PHYSICK, PHILIP SYNG (1768-1837). An American surgeon; born at Philadelphia, July 7; graduated at the University of Pennsylvania in 1785; studied medicine in Philadelphia and London, receiving in 1790 the appointment of house surgeon at St. George's Hospital; received his license from the Royal College of Surgeons in London in 1791, and was given his degree by the University of Edinburgh in 1792. He began practising in Philadelphia during the yellow-fever epidemic of 1793, and in 1794 was elected surgeon of the Pennsylvania Hospital. From that time until 1831 he filled various medical appointments, being president of the Phrenological Society of Philadelphia in 1822, and in 1824 president of the Philadelphia Medical Society. In 1825 he was elected a member of the French Academy of Medicine, and in 1836 was made an honorary fellow of the Royal Medical and Chirurgical Society of London. He introduced many valuable improvements in the treatment of disease, and invented modifications of surgical instruments. He died in Philadelphia, December 15.

PINEL, PHILIPPE (1745-1826). French alienist; born at St. André d' Alayrac, April 20, died in Paris, October 26. He studied medicine in Toulouse, in Montpellier and in Paris, where he had to teach philosophy and mathematics to keep himself alive. In 1791 he became directing physician in the Insane Asylum at Bicêtre and in 1794 at the Salpêtrière; and in both these institutions introduced gentle, kind treatment in place of the barbarities he found. In his book, *Sur l'Aliénation Mentale* (1791) he first suggested moral remedies for the insane, so that this work is the foundation of modern psychiatry. His *Nosographie philosophique* (1798) created an epoch in French medicine. He became a member of the Institute in 1803 on Cuvier's death. Suspected of liberal political views he was removed from his post in the medical school in 1823.

PIORRY, PIERRE ADOLPHE (1794-1879). A French physician; born in Paris. He was educated there, became doctor of medicine in 1816, and in 1840 was appointed professor of pathology and in 1850 of clinical medicine. He advised a new nomenclature which met with no success and invented the pleximeter for mediate percussion, for which he received the Montyon prize in 1828. He wrote: *De l'hérédité dans*

les maladies (1840); *Traité de médecine pratique* (1842-51), and *Traité de plessimétrisme* (1866).

- PITCAIRNE, ARCHIBALD** (1652-1713). Edinburgh physician and satirist, in 1692-93 was professor at Leyden. He was notorious as a Jacobite, an Episcopalian, a satirist of Presbyterianism, and, according to his opponents, an atheist and scoffer at religion. See *Life* by Webster (1781).
- POST, ALFRED CHARLES**, (1806-86). American surgeon; born at New York, January 13, and died there February 17. He was graduated from Columbia in 1822 and from the College of Physicians and Surgeons in 1827. After two years' further study in Europe he established a practise in New York; in 1831-35 was demonstrator of anatomy in the College of Physicians and Surgeons, in 1836 became attending surgeon at the New York Hospital, and throughout his life continued his connection there, occupying at his death the office of consulting surgeon. He was appointed professor of ophthalmic surgery at Castleton (Vt.) Medical College, in 1843, and of surgery in the following year. In 1851-57 he was professor of surgery in the University of the City of New York, vice-president of the New York Academy of Medicine in 1861-66, and its president in 1867-68; president of the Pathological Society, and for many years was connected with Saint Luke's, the Presbyterian, and the Women's Hospitals. He conducted a weekly clinic at the University Medical College, in New York, for many years, was the first surgeon in the United States to perform an operation for the cure of stammering, and was the inventor of several valuable surgical instruments and appliances. Besides numerous medical papers contributed to scientific journals, he published *Strabismus and Stammering* (1840).
- POST, WRIGHT** (1766-1828). American surgeon; born at North Hempstead, N. Y., February 19, died Throgg's Neck, N. Y., June 14. He received his medical education in New York and London, and in 1786 established a practise in New York. In 1792 he was appointed professor of surgery at Columbia, where he later occupied the chair of anatomy and physiology, afterward holding the same chair in the Medical School of New York. For 35 years he was consulting surgeon in the New York Hospital, president of the College of Physicians and Surgeons in 1821-26, and was prominently connected with numerous medical societies. He made himself famous by his surgical achievements, many of which were departures from the old school.
- POTT, PERCIVAL** (1713-1788). A British surgeon; born in London, England, he was a specialist in diseases of the

spine, and "Pott's disease" received its name from his discovery of the causes of curvature of the spine. For 38 years he was a chief surgeon at St. Bartholomew's Hospital, London. He published a number of treatises, among them *Nature and Consequences of Wounds and Contusions of the Head* (1760); and *That Kind of Palsy of the Limbs which Attends Curvature of the Spine* (1779). He died December 22.

PREYER, WILHELM THIERRY (1841-97). German physiologist; born at Manchester, England, July 4, and died in Wiesbaden, Germany, July 15. He was educated in the universities of Bonn, Berlin, Heidelberg, Vienna, and Paris; took his degree in both philosophy and medicine, and in 1869 was appointed professor of physiology at Jena. In 1888 he became privat-docent at Berlin. He has made valuable investigations in the fields of quantitative spectral analysis, the perception of sound and the precise qualities of the senses. Of his books the most famous is *Die Seele des Kindes* (1881), and especially deserving of mention are *Ueber Empfindungen* (1867); *Ueber die Grenzen der Tonwahrnehmung* (1876); *Elemente der allgemein Physiologie* (1883); *Der Hypnotismus* (1890).

PRICHARD, JAMES COWLES (1786-1848). Ethnologist; born at Ross, the son of a Quaker merchant, February 11, studied medicine, and in 1810, after a residence at Cambridge and Oxford commenced practise in Bristol. He was appointed physician to the Clifton Dispensary and St. Peter's Hospital, and afterwards to the Bristol Infirmary. In 1813 appeared his *Researches into the Physical History of Mankind* (4th ed. 1841-51), which secured him a high standing as an ethnologist. In *The Eastern Origin of the Celtic Nations* (1831; 2d ed. by Latham, 1857), he established the close affinity of the Celtic with the Sanskrit, Greek, Latin, and Teutonic languages. Besides several medical works, he also published an *Analysis of Egyptian Mythology* (1819) and *The Natural History of Man* (1843; 4th ed. 1855). He was president of the Ethnological Society, and in 1845 became a commissioner in lunacy. He died in London, December 22.

PRIESTLEY, JOSEPH (1733-1804). The father of pneumatic chemistry. He was born, a cloth-dresser's son, at Fieldhead in Birstall parish, Leeds, March 13. After four years in a Dissenting academy at Daventry, in 1755 he became Presbyterian minister at Needham Market, and wrote *The Scripture Doctrine of Remission*, denying that Christ's death was a sacrifice, and rejecting the Trinity and Atonement.

In 1758 he removed to Nantwich, and in 1761 became a tutor at Warrington Academy. In yearly visits to London he met Franklin, who supplied him with books for his *History of Electricity* (1767). In 1764 he was made LL.D. of Edinburgh, and in 1766 F.R.S. In 1767 he became minister of a chapel at Mill Hill, Leeds, where he took up the study of chemistry. In 1774, as literary companion, he accompanied Lord Shelburne on a continental tour, and published *Letters to a Philosophical Unbeliever*. But at home he was branded as an atheist in spite of his *Disquisition relating to Matter and Spirit* (1777), affirming from revelation our hope of resurrection. He was elected to the French Academy of Sciences in 1772 and to the St. Petersburg Academy in 1780. He became in that year minister of a chapel at Birmingham. His *History of Early Opinions concerning Jesus Christ* (1786) occasioned renewed controversy. His reply to Burke's *Reflections on the French Revolution* led a Birmingham mob to break into his house and destroy its contents (1791). He now settled at Hackney, and in 1794 removed to America, where he was heartily received; at Northumberland, Pa., he died February 6, believing himself to hold the doctrines of the primitive Christians, and looking for the second coming of Christ. Priestley is justly called the father of pneumatic chemistry; good authorities (see *Nature*, xlii, 1890), defend the priority of the discovery of oxygen (1774) and of the composition of water (1781), and deny Lavoisier's claim to be considered an independent discoverer. See Rutt's edition of Priestley's *Works* (1831-32), including *Autobiographical Memoir*; and Martineau's *Essays*.

PRIESTLEY, WILLIAM OVEREND (1829-1900). A British surgeon; born near Leeds, Yorkshire, June 24. He was educated at the University of Edinburgh, and took the degree of M.D. in 1853. Settling in London as a physician in 1856, he became one of the lecturers at the Grosvenor Place School of Medicine. Somewhat later, he was appointed lecturer on midwifery at the Middlesex Hospital, and in 1862 professor of obstetric medicine in King's College, London, and physician to King's College Hospital. He was knighted in 1893. He was examiner at the University of Cambridge and the Victoria University. Dr. Priestley published various works on natural history and medicine. Among his publications are *The Development of the Gravid Uterus* and *Obstetric Works*.

PRINGLE, SIR JOHN (1707-82). From 1748 a London physician, and physician to the king from 1774. He was born at Stitchel, Kelso, and in 1766 was made a baronet.

PROCIDA, GIOVANNI DA (about 1210-98). A royal physician and statesman; born at Salerno. See work by De Renci (Nap. 1860).

PROUST, JOSEPH LOUIS (1754-1826). A French chemist; born at Angers. He studied chemistry there and in Paris, and became chief apothecary to the Salpêtrière. He put on a firm basis the chemical law of definite proportions, sometimes called Proust's law; discovered glucose (1799); and in general greatly advanced the knowledge of quantitative analysis.

PROUT, WILLIAM (1785-1850). From 1812 a London physician and chemist. He was born at Horton near Chipping-Sodbury. His *Hypothesis* (1815) is a modification of the atomic theory.

PUCCINOTTI, FRANCESCO (1794-1872). An Italian physician, was professor at Rome and Pisa, and wrote a history of medicine.

Q

QUAIN, JONES (1796-1865). Born at Mallow, he studied medicine at Dublin and Paris, and in 1831-35 was professor of anatomy in London University. He wrote the well-known text-book, *Quain's Elements of Anatomy* (1828, 10th ed. 1890-96).

QUAIN, RICHARD (1800-87). English anatomist, brother of J. Quain; born at Fermoy, Ireland, in July; died in London, September 14. He was appointed professor of anatomy and clinical surgery in University College, London, in 1837, and was elected president of the Royal College of Surgeons in 1868. Among his works are: *Anatomy of Arteries*, with folio plates (1845); *Diseases of the Rectum* (1854); *Observations on Medical Education* (1865); *Some Defects of Medical Education* (1870). He bequeathed nearly \$375,000 to University College, London, for the "education in modern languages (especially English) and in natural sciences."

QUAIN, SIR RICHARD (1816-98). Born at Mallow, October 30; was Lumleian lecturer at the College of Physicians in 1872, Harveian orator in 1885, and was made physician-extraordinary to the Queen; LL.D. of Edinburgh in 1889, president of the General Medical Council in 1891, and a baronet in 1891. He edited the *Dictionary of Medicine* (1882); 2d ed. 1894).

QUESNAY, FRANÇOIS (1694-1774). Economist. He studied medicine at Paris, and at his death was first physician to the king. But the fame of the "European Confucius" depends

on his essays in political economy. Around him and his friend, M. de Gournay, gathered the famous group of the *Économistes*, also called the Physiocratic School. Quesnay's views were set forth in *Tableaux Économiques*. Only a few copies were printed (1758), and these are lost; yet Quesnay's principles are well known from his contributions to the *Encyclopédie*, and from his *Maximes du Gouvernement Économique*, *Le Droit Naturel*, etc.—collected in Oncken's edition of his *Œuvres* (1888).

R

RADCLIFFE, CHARLES BLAND (1822-89). An English physician; born at Brigg, Lincolnshire, the brother of John Netten Radcliffe (1826-84), the epidemiologist. He studied under a practising physician at Wortley, and afterwards in Leeds, in Paris, and at the London University, where he graduated in 1851. He was appointed physician to the Westminster Hospital in 1857, and in 1863 was made physician to the National Hospital for the Paralyzed and Epileptic. He was Gulstonian lecturer in 1860, and Croonian lecturer in 1873, to the Royal College of Physicians in London. His works include: *Proteus*, or the *Law of Nature* (1850); *The Philosophy of Vital Motion* (1851); *Epilepsy and Other Affections of the Nerve and Muscle* (1871); and *Vital Motion as a Mode of Physical Motion* (1876). With Ranking he edited Ranking's *Abstract of the Medical Sciences* (1845 to 1873).

RADCLIFFE, JOHN (1650-1714). English physician; born at Wakefield, he studied at University College, Oxford, became a fellow of Lincoln, took his M.B. in 1675, his M.D. in 1682, and in 1684 removed to London, where he soon became the most popular physician of his time, original, capricious, and not too temperate. A Jacobite, he yet attended William III and Queen Mary; in 1713 he was elected M.P. for Buckingham. He bequeathed the bulk of his large property to public uses—the Radcliffe Library, Infirmary, and Observatory, the University College at Oxford, and St. Bartholomew's Hospital, London.

RAMSAY, DAVID (1749-1815). American physician and historian. He was born in Lancaster County, Pennsylvania, April 2, and died at Charleston, S. C., May 8. He studied medicine and practised in Charleston, where he soon acquired celebrity. He was a field-surgeon in the Continental army, was elected to the State Legislature in 1776, was a prisoner of the British in 1780-81 and in 1772-76 served in the Conti-

mental Congress, acting as president in 1775-76. He was a member of the South Carolina legislature in 1801-15, and was president of the State senate when he was killed by a lunatic. He labored zealously with his pen to promote the cause of American independence, and among his publications are: *The History of the American Revolution* (1785); *The Life of Washington* (1789); *The History of South Carolina* (1809); *Universal History Americanized, or an Historical View of the World, from the Earliest Record to the 19th Century* (12 vols., 1816-17); etc.

RASPAIL, FRANÇOIS VINCENT (1794-1878). French chemist, doctor, and revolutionist, whose camphor-system (1845) was a forerunner of antiseptic surgery. See monograph by Saint-Martin (1877).

RAY, ISAAC (1807-81). An American physician; born in Beverly, Mass., January 16. He graduated at Harvard; practised medicine at Portland, Maine, and removed to Eastport in 1829; gave much attention to insanity, and was appointed superintendent of the State Insane Asylum at Augusta, Maine, in 1841, and of the Butler Asylum, in Rhode Island, in 1845. He removed, in 1867, to Philadelphia, where he died, March 31. He wrote *Medical Jurisprudence of Insanity* (1838); *Education in Relation to the Health of the Brain* (1851); and *Mental Hygiene* (1863).

REED, WALTER (1851-1902). American military surgeon and bacteriologist. He was born at Harrisonburg, Rockingham county, Virginia, and died in Washington, D. C., November 23. He graduated from the medical department of the University of Virginia and from the Bellevue Hospital Medical College of New York, and was made first lieutenant assistant-surgeon, U. S. A., June 26, 1875. His promotions were captain assistant-surgeon, June 26, 1880, and major surgeon, December 4, 1903. In 1890-91, while stationed at Baltimore, he made particular study of bacteriology in the laboratory of Professor William Welch, of the Johns Hopkins University; and established a laboratory of his own, in which he gave instruction to the student-officers of the Army Medical School. As curator of the Army Medical Museum, at Washington, D. C. (from 1893), he continued his researches, and soon became known as one of the leading bacteriologists of the country. His ability was especially displayed in his investigations of the causes and progress of epidemic diseases. In 1898 he was made head of the board for the study of the epidemics of typhoid occurring among the troops collected for the Spanish-American War. After the war he made several voyages to Cuba, and was on duty

at Havana, studying the diseases of the island, and more particularly yellow fever, as a member of a board for its investigation. After a series of brilliant experiments, he was able to announce that yellow fever is conveyed by a certain variety of mosquito (*Stegomyia fasciata*), individuals of which become infected by biting persons ill with the fever and by their bite introduce it into the blood of non-immunes. The United States military government at once proceeded to measures of extermination which banished the fever from Havana, where it had prevailed for three centuries; the Atlantic sea-board of the United States was also thereby freed from constant peril. This achievement must rank among the important triumphs of bacteriological science. Consult Keane, *Scientific Work and Discoveries of the Late Major Walter Reed* (Senate Doc. 118).

REGNAULT, HENRI VICTOR (1810-78). Chemist and physicist; born at Aix-la-Chapelle, was a mining engineer and a professor at Lyons, whence, in 1840, he was recalled to Paris as a member of the Academy of Sciences. Having filled chairs in the École Polytechnique and the Collège de France, he became in 1854 director of the Sèvres porcelain factory. He investigated gases, latent heat, steam-engines, etc., and published a *Cours Elementaire de Chimie* (14th ed. 1871). See *Éloge* by Dumas (1881).

RENAUDOT, THEOPHRASTE (1586-1653). A Protestant doctor, born at London, who settled in Paris in 1624, and founded the first French newspaper, the *Gazette de France*, in 1651. He also started the earliest Mont-de-Piété (1637), and advocated gratis dispensaries. See *Life* by Bonnefont (1893).

RHAZES, or Razi (flourished 925). A Persian physician and alchemist who practised at Bagdad.

RICHARDSON, SIR BENJAMIN WARD (1828-96). Born at Somerby, Leicestershire, October 31, studied at Glasgow, and took his M.D. at St. Andrews in 1854. He wrote on hygiene, strenuously promoted total abstinence, experimented with new anæsthetics, and invented several kinds of medical apparatus, methods for embalming, etc. An LL.D. and F.R.S., and knighted in 1893, he died November 21. His works include *Cause of the Coagulation of the Blood* (1856), *Hygeia, a Model City of Health* (1876), *Diseases of Modern Life* (1876), *Moderate Drinking* (1879), *Life of Edwin Chadwick* (1887), *Common Health* (1887), *National Health* (1890), *Life of Sopwith* (1891), and *Vita Medica* (1897). The quarterly *Asclepiad* (established 1884) was entirely written by him.

- RICHET, ALFRED** (1816-91). A French surgeon; born at Dijon. He rose rapidly in his profession, became a member of the Academy of Medicine in 1865, did good service in the ambulance corps at the siege of Paris and in 1873 was commander of the Legion of Honor. Long professor of clinical surgery, Richet wrote *Traité pratique d'anatomie médico-chirurgicale* (1857), and among special treatises, *Leçons cliniques sur les fractures de la jambe* (1875).
- RICORD, PHILIPPE** (1800-89). Physician; born at Baltimore, Md., removed to Paris, France, in 1820, and after 1828 lectured on surgical operations, and was surgeon-in-chief for a venereal hospital, 1831-60.
- ROBERTS, SIR WILLIAM** (1830-99). An English physician. He was born at Bodedern, Wales, and educated at University College, London. After studying in Paris and Berlin, he became house surgeon, and in 1855 full physician to the Manchester Royal Infirmary—a post which he held until 1883. He was a fellow of the Royal Society, received the Cameron prize in 1879, and on his coming to London became a fellow of the London University. The use of predigested foods for the nutriment of invalids was introduced into England by him and he was an authority on diet. Roberts wrote: *Blood Corpuscles Under Influence of Solutions of Magenta and Tannin* (1863), in which "Roberts's macule" were described; *Urinary and Renal Diseases* (1865; 4th ed. 1885); *Digestive Ferments* (Lumleian Lectures, 1880); and *Dietetics and Dyspepsia* (1885).
- ROBIN, CHARLES PHILIPPE** (1821-85). French physician and naturalist; born at Jasseron, department of Ain, June 4. He studied medicine in Paris. In 1847 he was made assistant professor of natural sciences on the Faculty of Medicine in Paris, and in 1862 professor of histology. He became celebrated for his microscopical researches in physiology. In 1864 he founded a journal on anatomy and physiology, in 1865 edited Nysten's *Encyclopædic Dictionary of Medicine*, and published *Cellular Anatomy and Physiology* (1873), and *A New Abridged Dictionary of Medicine* (1886). He died in Paris, October 6.
- ROGET, PETER MARK** (1779-1869). Son of a Huguenot minister, he became a physician to the Manchester Infirmary in 1804; physician to the Northern Dispensary, London, in 1808, F.R.S. (1815), and its secretary in 1827-49; Fullerian professor of physiology at the Royal Institution 1833-36; and an original member of senate of London University. He wrote *On Animal and Vegetable Physiology* (Bridgewater Treatise, 1834); and his *Thesaurus of English Words*

and *Phrases* (1852) reached a 28th ed. in his lifetime (new eds. 1879, 1881, etc.). He died at West Malvern.

ROKITANSKY, BARON KARL VON (1804-78). Bohemian anatomist; born at Königgrätz, February 19, died in Vienna, July 23. He studied at Prague and Vienna; became professor of pathological anatomy at the University of Vienna in 1834, and continued there until 1875. His great work, *Handbuch der pathologischen Anatomie* (1842-46), stands as the foundation of the science of pathological anatomy. It was translated by order of the Sydenham Society in 1849-52. In 1869 Rokitansky became president of the Austrian Academy of Sciences.

ROSE, HEINRICH (1795-1864). A German chemist. He was born in Berlin, August 6; was educated at Stockholm and Kiel, where he graduated in 1821, and was an instructor in the University of Berlin from 1822 till his death, being professor after 1835. His attention was devoted to analytic chemistry, which was advanced by him more than by any other one man. In 1844 niobium was discovered by him. His chief publication was *Handbuch der Analytischen Chemie* (1829); but he wrote a great many papers, published mostly in Gilbert's *Annalen* and Poggendorff's *Annalen*. He died in Berlin, January 27.

RUDINGER, NIKOLAUS (1832-96). A German anatomist; born in Büdesheim, and educated at Heidelberg and Giessen. He was appointed professor of anatomy at Munich in 1870. He was a pioneer in the use of photography in anatomic instruction. He published an *Atlas des peripherischen Nervensystems* (1861-65), an *Atlas des menschlichen Gehörorgans* (1866-75), *Topographisch-chirurgische Anatomie* (1872-79), and *Kursus der topographischen Anatomie* (1891).

RUSH, BENJAMIN (1745-1813). Born at Byberry, Pa., studied medicine at Edinburgh and Paris, and in 1769 became professor of chemistry at Philadelphia. Elected a member of the Continental Congress, he signed the Declaration of Independence (1776). In 1777 he was appointed surgeon-general, and later physician-general, of the Continental army. In 1778 he resigned his post because he could not prevent frauds upon soldiers in the hospital stores, and resumed his professorship. In 1799 he became treasurer of the U. S. Mint. His chief works were: *Medical Inquiries* (1789-93), *Essays* (1798), and *Diseases of the Mind* (1821; 5th ed. 1835).

RUSH, JAMES (1786-1869). An American physician; son of

the first Benjamin Rush; born in Philadelphia, March 1; graduated at Princeton in 1805, and at the medical department of the University of Pennsylvania in 1809; afterward studied in Edinburgh; practised medicine in Philadelphia; relinquished the active duties of his profession for scientific and literary pursuits. By marrying the daughter of Thomas Ridgway he acquired a princely fortune, \$1,000,000 of which he left for the erection of the Ridgway branch of the Philadelphia library. He wrote: *Philosophy of the Human Voice* (1827); *Analysis of the Human Intellect* (1865); *Rhymes of Contrast on Wisdom and Folly* (1869). He died in Philadelphia, May 26.

RUSS, JOHN DENISON (1801-81). American physician and philanthropist; born at Chebacco (Essex), Mass., in September; died at Pompton, N. J., March 1. He was graduated from Yale in 1823, studied medicine in the United States, in London, and on the Continent. In 1826 he began practise in New York, in 1827-30 was in Greece aiding the patriots, and upon his return began the first instruction of the blind attempted in the United States. He was invited to organize the Institution for the Blind in Boston, but preferred to continue his independent work. In 1832 he became superintendent of the New York institution, a post which he resigned in 1858. His inventions and improvements for the assistance of the blind were widely used. Latterly he was active in endeavors to improve prison discipline and further the welfare of discharged prisoners.

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SAINTE-CLAIRE DEVILLE, HENRI ETIENNE (1818-81).

French chemist. He was born in St. Thomas, West Indies, in 1851 became professor of chemistry in the Normal School at Paris, and shortly afterwards in the Sorbonne. It was he who first produced aluminium (1855) and platinum in commercial quantities, and demonstrated the general theory of the dissociation of chemical compounds at a high temperature. He also discovered (1849) anhydrous nitric acid; examined the form of boron and silicon; devised methods for fusing platinum, iridium, cobalt, etc.; and produced artificially sapphire, aluminium, etc. Besides many papers, he published *De l'Aluminium* (1859) and *Métallurgie du Platine* (1863). See *French Life* by Gay (1889).

SANDS, HENRY BERTON (1830-88). American surgeon; born at New York, September 27; died there November 18. He was graduated from the College of Physicians and Sur-

geons in 1856, and later studied abroad. On his return from Europe he became demonstrator of anatomy at the College of Physicians and Surgeons; in 1869 was appointed professor of anatomy, and in 1879 professor of the practice of surgery, holding the latter position until his death. He was attendant or consulting surgeon for several different hospitals, but gradually gave up his hospital work to give his attention to a rapidly increasing private practise. He became one of the foremost surgeons of the city, and was called for consultation in President Garfield's case. His publications include: *Aneurism of the Sub Clavian, treated by Galvano Puncture* (1869); *Esmarch's Bloodless Method* (1875); *Treatment of Intussusception by Abdominal Method* (1877); *Question of Trephinery in Injuries of the Head* (1883); and *Rupture of the Ligamentum Patella and its Treatment by Operation* (1885).

SAVORY, SIR WILLIAM SCOVELL (1826-95). An English surgeon; born in London, and educated at St. Bartholomew's Hospital, in the College of Surgeons, and at London University. In the hospital he was surgical and anatomical demonstrator (1849-59), surgeon (1867-91), and governor (1891-95). But his most important post was that of lecturer on surgery, a double chair, which he occupied with a colleague from 1869 to 1879, and alone until 1889, receiving £2,000 a year during the latter decade. In the Royal College of Surgeons he was president from 1885 to 1889. Savory became surgeon extraordinary to the Queen in 1887, and in 1890 a baronet. His declaration against "Listerism" in 1879 ranks him with the conservatives and he was a man of ability rather than brilliancy. He wrote *Life and Death* (1863).

SAYRE, LEWIS ALBERT (1820-1900). American surgeon; born at Bottle Hill (now Madison), N. J., February 29; died in New York, September 21. He was graduated from the Transylvania University in 1839, and three years later from the College of Physicians and Surgeons in New York. He was made professor of orthopedic surgery in the medical college of Bellevue Hospital in 1861, and professor emeritus at its consolidation with the New York University in 1898. In 1854 he successfully performed the first operation in the United States for the removal of the head of the femur in hip-joint diseases, and became known as the greatest American orthopedist. His original methods and his invention of instruments used in the treatment of deformed children made his name familiar to the entire medical world. He was the author of *Practical Manual*

of the Treatment of Club Foot (1869); *Orthopedic Surgery and Diseases of the Joints* (1876), etc.

SCARPA, ANTONIO (1747-1832). Italian anatomist; born at Friuli, June 13; died in Pavia, October 31. He studied medicine at Padua, in 1772 was appointed professor of anatomy at Modena, and published in that year his first work on the anatomy of the ear, *Anatomia Observationes de Structura Fenestræ rotundæ Auris*. In 1783 he resigned this chair to accept a similar one at Pavia, where he published his great work, *Anatomica Disquisitiones de Auditu*, etc. (1789). At the time of the revolution in Italy he was deprived of his professorship in the university on account of refusal to take the oath required by the Cisalpine Republic. He now published his celebrated work on *Aneurisms* (1804). When Napoleon, after his coronation as King of Italy, arrived at Pavia (1805), and received the officers of the university, he inquired after Scarpa. He was informed that he had long ceased to be a member of the university, and was told the reason. "What," said Napoleon, "have political opinions to do here? Scarpa is an honor to Pavia and to any dominions. Let him be honorably restored." Scarpa was the author of several other surgical works besides those already mentioned. Most of his works have been translated into English and French.

SCHÉELE, CARL WILHELM (1742-86). Chemist; born at Stralsund (then Swedish), he was apprenticed to a chemist at Gothenburg, and was afterwards chemist at Malmö, Stockholm, Upsala, and Köping. His whole life was devoted to chemical experiment, and he made many discoveries of the utmost importance. He discovered hydrofluoric, tartaric, benzoic, arsenious, molybdic, lactic, citric, malic, oxalic, gallic, and other acids, and separated chlorine, baryta, oxygen (1777), glycerine (1783), and sulphuretted hydrogen. He first described the pigment called Scheele's green, or arsenite of copper, and scheelite or tungsten. He showed in 1777, independently of Priestley, that the atmosphere consists chiefly of two gases, one supporting combustion, the other preventing it. In 1783 he described prussic acid. His papers were Englished by Beddoes (1786), and Nordenskiöld published his unedited German letters and papers (Stock. 1893).

SCHNITZLER, JOHANN (1835-93). An Austrian physician; famed as a pulmonary specialist; born at Gross-Kanisza, Hungary, and educated at Budapest and Vienna. He was assistant in Oppolzer's clinic from 1863 to 1867, and in 1878 became professor in the University of Vienna. He was the principal founder of the Vienna polyclinic. He wrote *Pneu-*

matische Behandlung der Lungen und Herzkrankheiten (1875); *Diagnose und Therapie der Laryngo- und Tracheostenosen* (1877); and *Lungensyphilis und ihr Verhältnis zur Lungenschwindsucht* (1880).

SCHONBEIN, CHRISTIAN FRIEDRICH (1799-1868). Chemist; born at Metzingen, Württemberg. From 1828 he was professor at Basel, discovered ozone, gun cotton, and collodion, and experimented on oxygen. See *Life* by Hagenbach (1869).

SCHRODER, KARL (1838-87). A German gynecologist. He was born at Neustrelitz and educated at Würzburg and Rostock. In Bonn he was assistant to Veit (1864-66) and docent, and in Erlangen he was from 1868 to 1876 professor and director of the lying-in hospital. From 1876 until his death he was professor in Berlin. He was a skillful and original operator, and the first to practise ovariectomy successfully in Germany. He wrote: *Lehrbuch der Geburtshilfe* (1870; revised by Olshausen and Veit) and *Krankheiten der weiblichen Geschlechtsorgane* (1874; revised by Koltmeier).

SCHULTZE, MAX SIGISMUND (1825-94). An eminent German anatomist and cytologist. He was born at Freiburg in Breisgau. After 1845 he studied at Greifswald and Berlin. In 1854 he was appointed adjunct professor in Halle, and in 1859 was called to the chair of anatomy in the University of Bonn. His chief works are on turbellarian worms (1851); on the Foraminifera of the Adriatic Sea (1854); on the embryology of various worms and of the lamprey; on the mode of termination of the finer nerves in the organs of sense; and on the electric organs of fishes; but his most notable contribution to general biology was his work on the nature of protoplasm and of cells. He was the first, after Dujardin, to establish the nature of protoplasm of rhizopods and to show that it was the fundamental substance of both animals and plants. His results are embodied in his tract *Das Protoplasma der Rhizopoden und der Pflanzenzellen. Ein Beitrag zur Theorie der Zelle* (Leipzig, 1863). He adopted Mohl's term "protoplasm," applied by him to botany alone, and extended it to include that of animals. Shultze was also the founder and editor of the *Archiv für mikroskopische Anatomie*.

SCHWANN, THEODOR (1810-82). A German physiologist and histologist. He was born at Neuss and educated in Bonn, Würzburg, and Berlin. In the Anatomical Museum of Berlin, he assisted Johannes Müller from 1834 to 1838, and discovered pepsin, made valuable studies on artificial

digestion, fermentation, and putrefaction, the organic nature of yeast, the mechanism of muscular and arterial contraction, the double direction of nerves, and the envelop of nerve fibres. In 1838-48 he was professor at Louvain, and then held a chair at Liège for another decade. Schwann made many physiological discoveries, but his most important achievement was his foundation of the modern cellular theory in *Microscopical Investigations on the Accordance in the Structure and Growth of Plants and Animals* (1839; Eng. version, 1847). He wrote *Anatomic du corps humain* for the Brussels *Encyclopédie Populaire* (1855).

SEGUIN, EDOUARD (1812-80). A French physician; born in Clamecy, January 20. In studying medicine he devoted himself chiefly to the training of idiots, and thoroughly investigated the cause and philosophy of idiocy, and the best means of dealing with it. In 1839 he opened the first school for young idiots in the Faubourg St. Martin, Paris. He was soon able to obtain remarkable results by his system of training. In 1844 a commissioner from the French Academy of Science examined his plan of training idiotic children, and reported that Dr. Seguin had solved this problem. He then published his *Traitement Moral, Hygiène et Education des Idiots* (1846), which is accepted as the standard authority. After the revolution of 1848 Dr. Seguin emigrated to America. Here he visited the schools for idiotic children in South Boston and Barre, Mass., and Albany, N. Y. After revisiting France twice he settled in New York City in 1863, where he later on established the Seguin Physiological School for feeble-minded children, which still exists. He also enjoyed a high repute as a specialist in nervous diseases. The United States Bureau of Education sent him as commissioner to the Vienna Exposition in 1873. Among his publications in English were: *Idiocy and Its Treatment by the Physiological Method* (1866); *Medical Thermometry* (1871); and *Report as Commissioner to the Vienna Exposition to the Secretary of State* (1876). He died in New York, October 28.

SEQUIN, EDWARD CONSTANT (1843-98). American physician and neurologist; born at Paris, France; died in New York, February 19. He was the son of Dr. Edouard Onesimus Sequin, and came with his father to America after the revolution of 1848. He was educated in the public schools of Ohio, began studying medicine with his father in 1861 and continued it at the College of Physicians and Surgeons in New York. He spent two years in the medical department of the Union army while enrolled as a student;

and contracted a tubercular difficulty, to cure which he served among the United States volunteers at Little Rock, Ark., during part of 1864-65, and again in New Mexico during 1868-69. During the winter of 1869-70 he studied nervous diseases under such Parisian specialists as Brown, Sequard, Charcot, Ranvier, and Cornil, and on his return to New York entered a medical partnership with Dr. W. H. Draper. He was appointed pathologist to the Connecticut Hospital for the Insane at its opening, and held the post ten years. From 1871 to 1885 he was a member of the faculty of the College of Physicians and Surgeons, giving lectures on the spinal cord and on nervous diseases. In 1873 he founded a clinic for nervous diseases. Apart from these duties he carried on an independent practise in his specialty, beginning with 1876. He was one of the founders of the American Neurological Association, and the New York Neurological Association. He bequeathed to the Academy of Medicine his large collection of books and pamphlets relating to nervous diseases, and to the College of Physicians and Surgeons other books and instruments.

SERVETUS, MICHAEL or Miguel Serveto (about 1511-53). Theologian and physician; born at Tudela in Navarre. He studied law at Saragossa and Toulouse. He went to Italy (1530) in the company of Quintañã, confessor to Charles V., and next to Germany, meeting Luther and other Reformers. But his own views, especially in respect to the Trinity—he denied the eternity of the Son—expounded in *De Trinitatis Erroribus* (1531) and other books, were abhorrent alike to Reformers and Roman Catholics. In 1536 he began to study medicine at Paris, and in 1541 became physician to the Archbishop of Vienna. Having reprinted (1553) some theological tracts, he was denounced to the inquisitor at Lyons. Arrested, he escaped from prison, but, rashly venturing into Geneva, was again arrested at Calvin's instance, and, after a nine weeks' trial, was burned, October 27. He had acquired fame as editor of Ptolemy and by his demonstration of the pulmonary circulation of the blood. See Calvin, and books by Pünjer (Latin, 1876), Tollin (German, 1876-82), and Willis (strongly partisan, 1877).

SIEBOLD, KARL THEODOR ERNST (1804-85). Anatomist. He was professor at Munich, and wrote on the Invertebrata (trans. 1857), parthenogenesis, salamanders, and the fresh-water fishes of central Europe. See *Life* by A. von Siebold (1896).

SIEBOLD, PHILIPP FRANZ VON (1796-1866). Physician

and botanist; born at Würzburg; became sanitary officer to the Dutch in Batavia, and, accompanying the Dutch embassy to Japan, made Japan known to the Western world by his writings.

SIMMONS, DUANE (1834-89). An American physician and scholar; born at Glens Falls, N. Y., who in 1859 went to Japan as medical missionary, but soon after entered the service of the Japanese government. In 1862-63, he continued medical study in Berlin. In 1869 he established the Juzen Hospital, instructing voluntary classes of Japanese doctors, and showing how cholera should be treated with the methods of modern sanitary science. In 1881, his health failing he returned to the United States; but in 1887, drawn again to Japan, he made a systematic study of Japanese feudal institutions. His studies of the Japanese village community are of the highest scientific value, and those on land tenure and social institutions have been published by Wigmore, in the *Transactions of the Asiatic Society of Japan*, vol. xix (Yokohama, 1892).

SIMPSON, SIR JAMES YOUNG (1811-70). Physician; born at Bathgate, June 7. He was a baker's son, and studied medicine at Edinburgh. He took his M.D. in 1832, and in 1837 became assistant to the professor of pathology; in 1840 professor of midwifery. He is chiefly remembered as having popularized the anæsthetic virtues of chloroform (1847). In obstetrics his improvements in practise were numerous and valuable. He was created a baronet in 1866, and died May 6. His works include: *Obstetric Memoirs* (1856); *Acupressure* (1864); *Homœopathy, Selected Obstetrical Works, Anæsthesia, Diseases of Women*, and *Archæological Essays* (1872). See *Life* by Duns (1873) and a sketch by his daughter (1897).

SIMS, JAMES MARION (1813-83). An American surgeon; born in Lancaster County, South Carolina, January 25. He was graduated at South Carolina College in 1832, and studied medicine in Charleston and Philadelphia, taking his degree from Jefferson Medical College in 1835. He practised first in his native county and then at Montgomery, Ala., where he established a reputation as a surgeon by his treatment of strabismus, club-foot, lockjaw in infants and by the invention of the silver suture for treating vesico-vaginal fistula and the "Sims speculum." In 1853 Dr. Sims removed to New York City, and there, in the face of opposition, he opened a hospital for the treatment of diseases of women, in 1855, and two years later secured an appropriation of \$50,000 from the New York legislature for a suitable

building. He went to Europe in 1861, and practised in Dublin, London, Paris and Brussels, receiving decorations from various European countries. In 1868 he returned to New York, but at the beginning of the Franco-Prussian War he went to Paris, and there organized the Anglo-American ambulance corps. He later returned to New York, where he became a member of the board of surgeons of the Woman's Hospital, and was at one time president of the American Medical Association. Besides his contributions to Medical journals, he published *The Story of My Life* (1884). He died in New York, November 13.

SKODA, JOSEPH (1805-81). An Austrian physician; born at Pilsen, Bohemia. After studying in Vienna, and a short practise in Bohemia, he was detailed to the Public Hospital in Vienna in 1833, became primary physician in 1841, professor at the clinic in 1846, and was elected a member of the Academy of Science in 1848. His *Abhandlung über die Auskultation und Perkussion* (1839; 6th ed. 1864) created an epoch in diagnostics, by demonstrating the principle that the physical symptoms observed in a patient only indicated certain physical conditions in his organism, whereupon it developed upon the rational physician to draw his conclusions as to the real internal disease from his pathologic-anatomical experience. This was in opposition to the French doctrine, until then prevalent, which interpreted the physical symptoms immediately as the signs of a definite process of disease.

SLOANE, SIR HANS (1660-1753). Physician and naturalist; born at Killyleagh, County Down. He was the son of an Ulster Scot; studied in London and in France, and settled in London as a physician. Already F.R.S., he spent over a year (1685-86) in Jamaica, collecting a herbarium of 800 species. He became secretary to the Royal Society (1693), foreign associate of the French Academy (1708), a baronet and physician-general to the army (1716), president of the College of Physicians (1719-35), and, president of the Royal Society and royal physician (1727). His museum and library of 50,000 volumes and 3,560 MSS. formed the nucleus of the British Museum. His great work was the *Natural History of Jamaica* (1707-25).

SMILES, SAMUEL (1812-1904). Born at Haddington, December 23; took his Edinburgh M.D. at twenty, and published *Physical Education* (1838). He practised in Haddington, and then settled as a surgeon in Leeds, but became editor of the *Leeds Times*, secretary of the Leeds and Thirsk Railway in 1845, and in 1854 secretary of the South-

Eastern Railway, retiring in 1866. While at Leeds he met George Stephenson, and undertook a *Life of him* (1857). *Self-Help* (1859) had an extraordinary success, and has been translated into seventeen languages. Henceforward Smiles' career was that of a popular author and compiler.

SMITH, HENRY HOLLINGSWORTH (1815-90). An American surgeon; born at Philadelphia, Pa. He graduated from the medical department of the University of Pennsylvania in 1837, studied two years in the hospitals of London, Paris and Vienna, and was professor of surgery in the University of Pennsylvania from 1855 till 1871, when he became professor emeritus. When the Civil War began he was appointed surgeon-general of Pennsylvania. He very thoroughly organized the field hospital service; introduced the practise of embalming on the field of battle, and in 1862 resigned to take up his practise and his work in the university. Among his published works are: *Minor Surgery* (1846); *System of Operative Surgery* (2 vols., 1852); *The Treatment of Disunited Fractures by Means of Artificial Limbs* (1855); and *Practise of Surgery* (2 vols., 1857-63).

SMITH, JOHN LAWRENCE (1818-83). American chemist and physician; born at Charleston, S. C., December 17; died in Louisville, Ky., October 12. He was educated at the University of Virginia and the South Carolina Medical College, studied chemistry in Europe with Liebig and Pelouze, and established in 1846 the *Medical and Surgical Journal of South Carolina*. He was appointed bullion assayer by the State of South Carolina; and in 1846 took service with the Turkish government to report upon the cotton culture and the mineral resources of Turkey. He returned to America in 1850 and taught chemistry in the medical department of the University of Louisville (1854-66). He made one of the largest known collections of meteorites, which, after his death, was acquired by Harvard University. He received decorations from the French, Turkish, and Russian governments; was president of the American Association for the Advancement of Science in 1874, and of the American Chemical Society, 1877; and in 1879 succeeded Sir Charles Lyell as corresponding member of the Academy of Sciences of the Institute of France. The more important of his many published papers were issued by him as *Mineralogy and Chemistry, Original Researches* (1873-84).

SPRENGEL, KURT (1766-1833). A German physician and botanist; born at Boldekow, near Auklam, and educated at Halle. In 1789 he was made professor of medicine there,

and in 1797 he was appointed professor of botany as well. He published: *Versuch einer pragmatischen Geschichte der Arzneikunde* (1792-1803; 4th ed. 1846); *Handbuch der Pathologie* (1795-97; 4th ed. 1815); *Historia Rei Herbariæ* (1807-08), *Geschichte der Botanik* (1817-18), and *Neue Entdeckungen in ganzen Umfange der Pflanzenkunde* (1819-22).

STAHL, GEORG ERNST (1660-1734). Born at Ansbach. He became court-physician (1687) at Weimar, professor of medicine (1694) at Halle, and body-physician (1714) to the king of Prussia. His Phlogiston theory was expounded in *Experimenta et Observationes Chemicæ* (1731), and that of Animiam in *Theoria Medica Vera* (1707).

STENO, NICHOLAS (1638-87). Born at Copenhagen, and trained to medicine, he won fame as an inquirer into the anatomy of the glands, heart, and brain. In 1667 he settled in Florence, turned Roman Catholic, and became physician to the grand-duke. He was the first to point out the true origin of fossil animals, explain the structure of the earth's crust, and distinguish clearly between stratified and volcanic rocks. But, drawn away from natural science, he was made a bishop, and in 1677 dispatched to North Germany as vicar-apostolic. See Prof. Hughes in *Nature* (1882).

STORER, DAVID HUMPHREYS (1804-91). An American physician; born in Portland, Me., March 26. He graduated at Bowdoin in 1822; afterward studied medicine at Harvard, and began his practise in Boston. He was appointed professor of obstetrics and medical jurisprudence in Harvard Medical School in 1854, and later, dean of that school. He remained in that position until 1876; was always interested in zoölogical studies, and published several treatises, among them: *Ichthyology of Massachusetts* (1839); and *Fishes of North America* (1846). He died in Boston, Mass., September 10.

SUE, MARIE-JOSEPH-EUGENE (1804-59). A master of melo-dramatic fiction; born at Paris, December 10. He served as an army and naval surgeon in Spain (1823) and at Navarino (1828), and worked up his experiences into the Byronic and absurd novels *Kernock le Pirate*, *La Salamandre*, etc., as well as the unhistorical *Histoire de la Marine Française* (1835-37), and *Histoire de la Marine Militaire* (1841). His first hit was the too famous *Mystères de Paris* (1842); its successor, *Le Juif Errant* (1845), was no less successful. Later works were: *Martin, l'Enfant Trouvé* (1846); *Les Sept Péchés Capitaux* (1847-49), and *Les Mystères de Peuple* (1849); the last condemned by the courts as immoral and seditious. Sue was elected deputy

for Seine in 1850, and attached himself to the Extreme Left. The *coup d'état* of December, 1851 drove him into exile. He died in Annecy in Savoy, August 3.

SWAMMERDAM, JAN (1637-85). Entomologist. He was born at Amsterdam, practised as a physician there and at Leyden, but gave far more attention to the study of insects, became straitened for means, and finally was carried away by the religious mysticism of Antoinette Bourignon. His chief services to science were in the anatomy of bees and the metamorphoses of insects. His most important books were a treatise on animalcules (1669) and *Biblia Natura* (ed. Boerhaave, 1737-38).

SWIETEN, GERARD VAN (1700-72). A celebrated Dutch physician and scholar; born at Leyden, where, after studying philosophy at Louvain, he pursued medicine under Boerhaave, whose most distinguished pupil he became. Called to Vienna in 1745, as physician in ordinary to Maria Theresa, he instilled new life into every branch of science, but especially promoted reforms in the study of medicine, which, as director of the faculty, he raised to a high standing through his own teachings as well as by the appointment of famous specialists to chairs at the university. Reforms in the other faculties presently followed, and although greatly hampered by the intrigues of the Jesuits, Van Swieten held his own against them, here as well as in the supervision of censorship, in which considerable authority was accorded him as custodian of the Imperial library, and of which he was finally appointed chairman in 1759. In science he sought his fame as an expositor of his teacher, Boerhaave. His *Commentaria in Hermanni Boerhaave Aphorismos de Cognoscendis et Curandis Morbis* (new ed. 1787-92), hold a permanent place in medical literature. In 1758 Van Swieten, having saved the life of the Empress, was created a baron.

SYDENHAM, THOMAS (1624-89). An English physician; born at Winford Eagle, Dorsetshire; died in London, December 29. He was educated at Oxford, where, after serving as an officer in the parliamentary army during the Civil War, he became (1648) a fellow of All Souls' College. He studied medicine in France, took his degree of M.D. at Cambridge, and about 1660 settled as a physician in London, where he rapidly rose to the leading rank. Departing from the traditional therapeutics of the profession he directed his medical work to the assisting of nature, upon whose recuperative powers he taught reliance. As a diagnostician and scientific observer of the phenomena of

diseases in relation to physical environments he displayed remarkable sagacity. He introduced the use of cooling remedies in smallpox, and of cinchone in malarial fever. His works written in Latin have been often translated. The Sydenham Society, named for him, was founded in 1843, its object being the printing of medical works in different languages. The first which it issued (1846) were those of Sydenham himself, in Latin. These were published in 1848 in an English translation by Greenhil, with a *Memoir* by Latham.

SYME, JAMES (1799-1870). Surgeon; born in Edinburgh, and educated at the university there; in 1818 he announced a method of making cloth water-proof, afterwards made and patented by Macintosh. In 1823-33 he lectured on surgery. In 1831 appeared his treatise on *The Excision of Diseased Joints*; in 1832 his *Principles of Surgery*. In 1833 he became professor of clinical surgery. His life abounded in controversies. Syme, who had no superior either as operator or as teacher, wrote further on pathology, stricture, fistula, incised wounds, etc. See *Memoir* by Paterson.

T

TAGLIACOZZI, GASPARO (1546-99). Bologna professor of anatomy and surgery. He first performed the Taliacotian or rhinoplastic operation for the making of new noses.

TAYLOR, ALFRED SWAINE (1806-80). An English physician and toxicologist; born at Northfleet, Kent, in December. He was professor of chemistry in Guy's Hospital, London, and its first professor of medical jurisprudence. He wrote *Photogenic Drawing* (1840); *A Manual of Medical Jurisprudence* (1843); *Poisons in Relation to Medical Jurisprudence and Medicine* (1848); *Poisoning by Strychnia* (1856); *Principles and Practice of Medical Jurisprudence* (1865); in conjunction with Dr. W. T. Brande, *Manual of Chemistry* and edited the *Medical Gazette*. He died May 27.

TAYLOR, CHARLES FAYETTE (1827-99). A celebrated American orthopædic surgeon. He was born in Williston, Vt., and educated at the University of Vermont. In the year 1857 he was in London, studying the Swedish movement-cure under Roth. Subsequently he settled in New York City, and was one of the first to introduce the movement cure into this country. Dr. Taylor early became a specialist in orthopædic surgery, in which he was very successful. He was especially skilled in devising original appliances to meet deformities. Among his inventions are the Taylor splint

for treatment of curvature of the spine and the long extension hip splint. He was the founder of the New York Orthopædic Dispensary and Hospital, of which he was the executive surgeon for many years. Taylor established in New York City an institute for the treatment of deformities, which was successfully operated for many years previously to the organization of the hospital. His publications include: *Principles and Practice of Hygieno-Medical Science*, with George H. Taylor (1857); *The Movement Cure* (1858); *The Theory and Practice of the Movement Cure, or the Treatment of Lateral Curvature of the Spine*, etc., (1861); *The Mechanical Treatment of Angular Curvature or Potts' Disease of the Spine* (1865); *Spinal Irritation or the Causes of Backache Among American Women* (1864); *Infantile Paralysis and Its Attendant Deformities* (1867), and *On the Mechanical Treatment of Diseases of the Hip Joint* (1873).

TAYLOR, ISAAC EBENEZER (1812-89). An American physician; born at Philadelphia, April 25; died in New York, October 30. He was graduated from Rutgers College in 1830, and in medicine from the University of Pennsylvania in 1834. He subsequently studied in Europe, settled in New York, and had charge of the department of women's diseases at the City, Eastern, Northern, and Demitt dispensaries, for seven years each. In 1851 he was elected physician to Bellevue Hospital, where he initiated important reforms, secured the foundation of the hospital college, and became its head in 1861. He was subsequently president of the medical board of the hospital; attending physician and head of the medical board of the Charity Hospital. He was obstetrical physician to the Maternity Hospital. He was the first American to introduce uterine auscultation, helped introduce the hypodermic method of treatment by morphia and strychnia, and was the earliest in this country to use the speculum in diseases of women and children. He put out a monograph on this subject in 1841.

THENARD, LOUIS JACQUES (1777-1857). French chemist; born at Louptiere, Champagne, May 4; died in Paris, June 21. He studied chemistry in Paris under Fourcroy and Vauquelin, becoming the assistant of the latter, who procured him a professorship at the College de France (1804). Subsequently he succeeded Fourcroy in the chair of chemistry at the Ecole Polytechnique, as well as in his seat in the academy. In 1825 he was made a baron by Charles X., and in 1832 a peer of France by Louis Philippe. It was while attempting to verify a theory he had propounded in

the lecture-room that he made his important discovery of the peroxide of hydrogen. He worked with the chemist Gay-Lussac, and made noteworthy original investigations, including those of the compound ethers, of bile, and of sebatic acid. He discovered the method of preparation of a cheap cobalt blue, since known as "Thénard's blue." His chief publications are a *Treatise on Elementary Chemistry* (4 vols. 1813-16); and *Physico-Chemical Researches* (with Gay-Lussac, 1816).

THOMSON, THOMAS (1773-1852). A Scotch chemist; born at Perthshire, Scotland, April 12. He was educated at St. Andrews University, and studied medicine at the University of Edinburgh. In 1802 he became editor of Mill's *Literary Journal*; was a teacher and editor for a number of years; and in 1818 became professor of chemistry in the University of Edinburgh; edited *Annals of Philosophy* (1813-22), and wrote *The Elements of Chemistry* (1810); *Travels in Sweden and Lapland* (1813); *An Attempt to Establish the First Principles of Chemistry by Experiment* (1825); and *Outlines of Mineralogy, Geology, and Mineral Analysis* (1836). He died at Kilmun, Argyleshire, July 2.

TODD, ROBERT BENTLEY (1809-60). An Irish physician; born at Dublin, and educated there at Trinity College. In London he lectured on anatomy for a short time at the Aldersgate Street School of Medicine and then went up to Oxford. About this time he projected the *Cyclopædia of Anatomy and Physiology*—a work which did much to advance the study of comparative and microscopic anatomy. The first number was published in 1835 and the entire work was completed in 1859. He was appointed professor of physiology and general and morbid anatomy at King's College, London, in 1836. In 1849 he gave the Lumleian lectures and in 1853 he resigned his professorship in King's College. He was known for his pioneer work in the treatment of fevers and inflammations. His publications include: *Gulstonian Lectures on the Physiology of the Stomach* (1839); *Practical Remarks on Gout, Rheumatic Fever, and Chronic Rheumatism of the Joints* (1843); *Description and Physiological Anatomy of the Brain, Spinal Cord, and Ganglions* (1845); *Lumleian Lectures on the Pathology and Treatment of Delirium and Coma* (1850); and *Chemical Lectures* (3 vols., 1854-59, and 1 vol. 1861).

TURNBULL, LAURENCE (1821-1900). An American physician; born in Shotts, Lanarkshire, Scotland. He graduated at the Philadelphia College of Pharmacy, in 1842, and for a while was occupied in the manufacture of chemicals.

In 1845 he graduated at the Jefferson Medical College and was appointed house physician of the Philadelphia Hospital. He lectured on chemistry at the Franklin Institute from 1848 to 1850 and from 1859 to 1887 was attached to the Harvard Hospital, in charge of eye and ear diseases, of which he became a well-known specialist. During the Civil War he served as a volunteer surgeon. Among his writings, some of which passed through many editions, are: *Defective and Impaired Vision* (1859); *Hints and Observations on Military Hygiene* (1862); *Imperfect Hearing and Hygiene of the Ear* (1871); *The Nature and Treatment of Nervous Deafness* (1874); *A Clinical Manual of the Diseases of the Ear* (1881); *A Manual of Anæsthetic Agents and Their Employment in the Treatment of Disease* (1885).

U

URE, ANDREW (1778-1857). A Scotch chemist; born in Glasgow. He was educated at Glasgow University, prosecuted his medical studies at Edinburgh, and received his M.D. at Glasgow (1801); appointed to the chair of chemistry at the Andersonian University, Glasgow (1802); was the first astronomer to the Glasgow observatory, which his efforts helped to establish (1809). The literary works for which he is chiefly distinguished are his *Dictionary of Chemistry* (1821) and his *Dictionary of Arts, Manufactures and Mines* (1839), many revised editions of which have been published since. He died in London, January 2.

V

VAN BUREN, WILLIAM HOLME (1819-83). An American surgeon who was born in Philadelphia. He studied two years in Yale; graduated at the medical department of the University of Pennsylvania in 1840. Entered the army and served in Florida and on the Canadian frontier; was on the staff of Bellevue Hospital from 1849 till 1852; was professor of anatomy in the Medical College of New York University from 1852 till 1866; and from 1866 till shortly before his death occupied the chair of surgery in Bellevue Hospital Medical College. He translated Bernard and Huette's *Operative Surgery and Medical Anatomy* (1855), and Morel's *Compendium of Human Histology* (1861). He also published: *Contributions to Practical Surgery* (1865); *Lectures on Diseases of the Rectum* (1874); and, with Dr. E. L. Keyes, *Text-book on Diseases of the Urinogenital Organs with Syphilis* (1874).

- VESALIUS, ANDREAS** (1514-64). Anatomist. He was born at Brussels, of a family that had come from Wesel, was surgeon to the imperial army in the Low Countries, and professor of anatomy at Padua, Pisa, Bologna, and Basel. In 1544 he became physician to Charles V. He raised such ill-will by practising the dissection of human subjects and by opposing Galen that he withdrew from court, and perished at Zante on his voyage back from a pilgrimage to Jerusalem. His *De Corporis Humani Fabrica* (1543) marks an epoch in anatomy. See German work by Roth (1892) and G. M. Cullen in the *Dublin Medical Journal* (1894).
- VIUSSSENS, RAYMOND** (1641-about 1720). A French anatomist; born in Rouergue, and educated at Montpellier. In 1671 he was appointed physician in the Hôpital de Saint Eloi and there devoted himself to the study of neurology. His *Neurographia Universalis* (1685), with an account of his important researches on the anatomy of the brain and of the spinal column, won him membership in the French Academy of Sciences and in the Royal Society of London. The "valve of Vieussens" is a name still applied to the superior medullary velum, which he discovered.
- VILLALOBOS, FRANCISCO LOPEZ DE** (about 1473-1545). A Spanish physician and author; born in Toledo, of a Jewish family. He studied medicine, became a convert to Christianity, and physician to Charles V. His works include a translation of *Plautus's Amphitruo*, the didactic books *Problemas* (1515) and *Tratado de los tres grandes vicios*, the poems *Canción* and *El sumario de medccina* (1538).
- VIRCHOW, RUDOLF** (1821-1902). German scientist; born at Schivelbein, Prussia, October 13; died in Berlin September 5. He studied medicine in Berlin in 1839-43, and in the latter year became a surgeon's assistant. From 1844 to 1846 he was assistant at the Charité Hospital, and in the latter year became prosector there. He qualified in 1847 as a lecturer at the University of Berlin, and in that year also he was associated with Benno Reinhardt in founding the *Archiv für pathologische Anatomie und Physiologie und für klinische Medizin*, world famous as "Virchow's Archives," which he edited alone from Reinhardt's death in 1852 till his own. He made himself known as a pronounced democrat in the year of the revolution, 1848, and his political activity caused the government to remove him (1849) from his prosectorship, but he was soon reinstated, and accepted the chair of pathological anatomy at Würzburg.

In 1852 he became joint editor of the Cannstatt reports on the progress of medicine, which he continued in conjunction with others till his death. In 1856 he returned to Berlin as professor of pathological anatomy, general pathology, and therapeutics, and director of the recently founded pathological institute. He became a member of the Municipal Council of Berlin in 1859, and began his career as a civic reformer. Elected to the Prussian Diet in 1862, he became leader of the Radical or Progressive party; and in 1880-93 he was a member of the Reichstag. Virchow was a determined opponent of Bismarck's policy, and in 1865 was challenged to a duel by the "man of blood and iron." He exercised especial influence in matters relating to public health, and during the wars of 1866 and 1870-71 he took an active part in organizing the army sanitary services. During his membership of 40 years in the Berlin Municipal Council he was active in promoting the sanitary improvement of the city. In 1870 he assisted in founding the Deutsche and Berliner Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte, of which he was several times president, and in 1879 he made a journey to the site of Troy, described in *Beiträge zur Landeskunde in Troas* (1879) and *Alttrajanische Gräber und Schädel* (1882). He visited England in 1893 and delivered the Croonian lecture to the Royal Society on "The Place of Pathology in Biological Studies," receiving on the occasion the honorary degree of D.C.L. from Oxford. In 1898 he delivered the Huxley lecture in London, his subject being "Recent Advances in Physiology." Virchow founded cellular pathology; was scarcely less distinguished in archæology and anthropology, and was the author of many important works, among which are: *Handbuch der speciellen Pathologie und Therapie* (1854-76), prepared in collaboration with others; *Vorlesungen über Cellularpathologie in ihrer Begründung auf physiologischer und pathologischer Gewebelehre* (1859), his chief work, forming in the 4th edition the first volume of *Vorlesungen über Pathologie* (1862-71); *Vier Reden über Leben und Kranksein* (1862); *Ueber den Hungertyphus* (1868); *Ueber einige Merkmale niederer Menschenrassen am Schädel* (1875); *Beiträge zur physischen Anthropologie der Deutschen* (1876); *Die Freiheit der Wissenschaft im modernen Staat* (1877); *Gesammelte Abhandlungen aus dem Gebiete der öffentlichen Medizin und der Seuchenlehre* (1879); etc. It was in fulfilment of the desires of Virchow that the German government erected in Berlin the Pathological Institute and Museum, the greatest institution of its kind in the world. Consult his *Life* by Beecher (1901).

W

WAKLEY, THOMAS (1795-1862). An English surgeon and reformer; born at Membury, Devonshire. He studied medicine in the Borough Hospitals in London and at a private school of anatomy founded by Edward Grainger. For several years he practised in London, and then in 1823 founded a weekly medical journal called the *Lancet*, through which he made many bitter enemies, but accomplished much good. From 1835 till 1852 he was a member of the House of Commons, and carried through many reforms. In 1851 he began in the *Lancet* a crusade against adulterated foods which resulted in legislation to correct the evil.

WARREN, JOHN COLLINS (1778-1856). An American surgeon; born in Boston, Massachusetts, August 1; graduated at Harvard in 1797; in 1800 studied chemistry in Edinburgh; in 1801 attended the lectures of Vauquelin, Cuvier and Desfontaines in Paris; in 1802 began to practise in Boston; from 1806 to 1815 was adjunct professor of anatomy and surgery in Harvard Medical School; professor (1815-47), and emeritus professor (1847-56). He died in Boston, May 4. In 1803 he was joint editor of the *Monthly Anthology*; in 1811 assisted in founding the *New England Journal of Medicine and Surgery*, and in 1828 founded and edited the *Boston Medical and Surgical Journal*. He was one of the founders of the Massachusetts General Hospital in 1820, and of the McLean Asylum for the Insane. For many years he was president of the Boston Society of Natural History. He was the first to operate for hernia and aneurism, and in 1846 successfully used anæsthetics in surgical operations. He contributed to scientific journals and published numerous and valuable monographs relating to surgery, palæontology, and the use of chloroform and ether.

WATSON, ROBERT (1746-1838). Born at Elgin; took his M.D. in Scotland, and was Lord George Gordon's secretary. He fought for American independence, was president of the Revolutionary Corresponding Society, state prisoner for two years in Newgate, Napoleon's tutor in English, and president of the Scottish College at Paris. He unearthed the Stuart papers at Rome, and ended by strangling himself in a London tavern. See Bishop Forbes in *Proc. Soc. Ant. Scot.* for December, 1867.

WATTS, HENRY (1815-1884). An English chemist; born in London, January 20. He was educated to scientific pursuits; became demonstrator of chemistry at the University College, London; librarian to the Chemical Society (1850);

editor of its *Journal* (1861). He translated Gmelin's *Handbuch der Chemie* (18 vols., 1848-55); but is better known by his *Dictionary of Chemistry*, based on that of Dr. Ure (5 vols., 1863-68), supplements to which were issued (1872-1875, 1881), and a new edition by Morley and Muir (4 vols., 1889-94). He died in London, June 30.

WEBER, ERNST HEINRICH (1795-1878). From 1818 professor of anatomy and physiology at Leipzig; made important researches on the senses. Wilhelm Eduard Weber (1804-91), his brother, from 1831 professor of physics at Göttingen, was one of the seven professors deposed in 1837 for their protest against the king's revocation of the liberal constitution. He was associated with Gauss in his researches on electricity and magnetism. See monograph by Riecke (1892).

WELLS, SIR THOMAS SPENCER (1818-97). An English surgeon and ovariologist; born at Saint Albans (Hertfordshire), and educated at Trinity College, Dublin, and at Saint Thomas's Hospital, London. In 1841 he was admitted to the Royal College of Surgeons, and in that institution subsequently held all the principal offices. After serving in the Naval Hospital at Malta, he studied under Magendie in Paris, and in 1853 established himself as an ophthalmic surgeon in London. He was chosen surgeon at the Samaritan Free Hospital for Women and Children (1854). At the Samaritan Hospital he began the work in abdominal surgery which made his name famous. In 1858 he first performed the discredited operation of ovariotomy. In spite of much opposition, the method was finally accepted by the profession in 1864, and by 1880 Wells had performed his thousandth operation. For his achievements Wells was elected to the King's and Queen's College of Ireland, and to the Irish Royal College of Surgeons, and received many other honors. He was one of the first advocates of cremation in England and was largely instrumental in obtaining countenance for that system. He published: *Practical Observations on Gout and Its Complications* (1854); *Cancer Cures and Cancer Curers* (1860); *Diseases of the Ovaries; Their Diagnosis and Treatment* (1865-72; also Leipzig, 1866-74, and U. S. A.); *On Ovarian and Uterine Tumors; Their Diagnosis and Treatment* (1882; also Milan, 1882); *Diagnosis and Surgical Treatment of Abdominal Tumors* (1885; also Paris, 1886).

WIGHT, ORLANDO WILLIAMS (1824-88). An American author; born at Centerville, N. Y., February 19; educated at Westfield Academy and at the Rochester Collegiate Insti-

tute. After teaching Latin and Greek in Genoa Academy, and mathematics and languages in Aurora Academy, he removed to New York, where he studied theology, though he never connected himself with any denomination. He afterward studied medicine, and was appointed Wisconsin state geologist and surgeon-general in 1874. He served as health-officer for the city of Milwaukee, Wis. (1877-82), and for the city of Detroit, Mich. (1882-88). He received the degree of LL.D. from Yale University. Besides contributing to *The North American Review*, *The New Englander* and other magazines, he published a large number of works, including *The Romance of Abélard and Héloïse* (1853; enlarged ed. 1861); *The Philosophy of Sir William Hamilton*; translations of Victor Cousin's *Course of the History of Modern Philosophy* (1852); and *Lectures on the True, the Beautiful and the Good* (1854); and *Standard French Classics* (1859), in 12 volumes. He also assisted Mary L. Booth in the translation of Henri Martin's *History of France* (1863). He died in Detroit, October 19.

WILLIS, THOMAS (1621-75). An English anatomist and physician; born at Great Bedwin, Wiltshire. He was graduated in 1839 at Oxford, where he began practise in 1846. He fought as a Royalist in the Revolution, studied medicine during the Protectorate, and at the Restoration was made Sedleian professor of natural philosophy at Oxford. He afterwards settled in London, where he became a founder of the Royal Society, and in 1666 he became physician in ordinary to Charles II. Willis made important medical discoveries concerning the brain—a system of connecting arteries at the base of the brain is called the “circle of Willis” after him. It is claimed that he first suggested the possibility of localization of function in the brain, and published two treatises on the subject: *Anatomy of the Brain* (1664); and *Pathology of the Brain and Nervous System* (1667). He was buried in Westminster Abbey. Besides many works, he published *Cerebri Anatome, cui Accessit Nervorum Descriptio et Usus* (London, 1664); *Pathologia Cerebri, etc.* (Amsterdam, 1668); *Affectionum quæ Dicuntur Hysterica et Hypochondriaca Pathologia Spasmodica Vindicata* (Leyden, 1671); *De Anima Brutorum* (London, 1672). His complete works, *Opera Omnia*, were published in Geneva (1676), and translated into English in London (1684).

WILSON, SIR ERASMUS (1809-84). Was a skilful dissector at the College of Surgeons in London, but was best known as a specialist on skin diseases. He published *Anatomist's*

Vademecum, Book of Diseases of the Skin, Report on Leprosy, and Egypt of the Past. The great wealth he acquired by his practise he bestowed largely in benefactions to the poor and to science, and in promoting Egyptian research. He brought Cleopatra's Needle to London in 1878 at a cost of £10,000. He was president of the College of Surgeons, and was knighted in 1881.

WILSON, GEORGE (1818-59). Chemist, younger brother of Sir Daniel Wilson, lectured on chemistry, and from 1855 was professor of Technology in Edinburgh University. He was also director of the Industrial Museum. He wrote *Text-book of Chemistry* (1850), *Life of Cavendish* (1851), *Life of Dr. John Reid* (1852), *Researches in Color-blindness* (1855), *The Five Gateways of Knowledge* (1856), *Counsels of an Invalid* (1862), and *Religio Chemicæ* (1862). See *Memoir* by his sister (new ed. 1862).

WINSLOW, FORBES BENIGNUS (1810-74). English alienist; born at London, of a Massachusetts family, in August; died at Brighton, Sussex, March 3. He came to this country in early life, studied medicine in New York, was graduated from the College of Surgeons, London, in 1835, and took his M.D. at Aberdeen. Having after 1830 paid special attention to the study of insanity, he opened a private asylum at Hammersmith, and later another in London, and came in time to be a supreme authority on all relating to diseases of the brain. He founded and edited the *Quarterly Journal of Psychological Medicine and Mental Pathology* (1848) and the *Medical Critic* (1861). He was the juridical and president of the Medical Society of London (1853), and a member of numerous scientific bodies. He published: *The Application of Phrenology to the Elucidation and Cure of Insanity* (1831); *Anatomy of Suicide* (1840); *Plca of Insanity in Criminal Cases* (1843); *Notes on the Lunacy Act* (1845); *Softening of the Brain* (1849); *Lethsonian Lectures on Insanity* (1854); *Obscure Diseases of the Brain and Disorders of the Mind* (1860; 4th ed. 1868); *Light; Its Influence on Life and Health* (1867); etc.

WISTAR, CASPER (1761-1818). American physician; born at Philadelphia, September 13; died there January 22. He attended the medical department of the University of Pennsylvania in 1782, subsequently studied medicine at the University of Edinburgh, and returned to the United States in 1787. He was professor of chemistry and the Institutes of Medicine at the College of Philadelphia (1789-92). In the latter year that institution was united with the medical department of the University of Pennsylvania, and he was

there adjunct professor of anatomy, midwifery, and surgery (1792-1808); then becoming professor of anatomy and holding that chair till his death. He was the first to show that the posterior portion of the ethmoid bone was attached to the triangular bones. He opened his house once a week for meetings of students, travelers, scientists and citizens, and these symposiums continued long after his death, and were known as the Wistar parties. Wistar became a member of the American Philosophical Society in 1787, and succeeded Thomas Jefferson as its president in 1815. He was the author of *A System of Anatomy, for the Use of Students of Medicine*.

WOHLER, FRIEDRICH (1800-82). A German chemist, whose artificial production of urea in 1828 marked a new era in organic chemistry.

WOLCOT, DR. JOHN, "Peter Pindar" (1738-1819). Born at Dodbrooke, Devon; studied medicine for seven years, took his M.D. at Aberdeen (1767), and, going to Jamaica, became physician-general of the island. He returned to England to take orders, but soon started medical practise at Truro. Here he discovered the talents of young Opie, and with him in 1780 removed to London, to devote himself to writing audacious squibs and satires in verse. His sixty or seventy poetical pamphlets (1778-1818) include *The Lousiad*, *The Apple-dumplings and a King*, *Whitbread's Brewery Visited by their Majesties*, *Bozzy and Piozzi*, and *Lyrical Odes* on the Royal Academy Exhibitions. Witty and fluent, but coarse and ephemeral, they have long since outlived their great vogue. See *Blackwood's Magazine* for July, 1868.

WOLFF, KASPAR FRIEDRICH (1733-94). A German anatomist and physiologist; born in Berlin and educated there and at Halle. During the Seven Years' War he was actively employed in the Silesian hospitals. Unable to establish himself in Germany, in 1766 he accepted an appointment in the Academy of Sciences at Saint Petersburg, making that city his residence for the remainder of his life. Wolff will be remembered for combating at the age of twenty-six, in his *Theoria Generationis*, the preformation views then prevalent. But it was not until after Wolff's death that he obtained proper recognition through the translations of Meckel and the writings of Oken. His chief works are: *Theoria Generationis* (1759; German trans., *Theorie von der Generation*, Berlin, 1764); *De Formatione Intestinatorum* (1768; trans., into German by Meckel as *Ueber die Bildung des Darmkanals im hebrüteten Hühnchen*, Halle, 1812). Many

of his unpublished writings are preserved as manuscripts in the library of the Saint Petersburg Academy.

WOLLASTON, WILLIAM HYDE (1766-1828). Chemist and natural philosopher; born at East Dereham, Norfolk, August 6; the second son of the Rev. Francis Wollaston (1731-1815), rector of Chiselhurst, and an astronomer. He went to Caius College, Cambridge, took his M.D. in 1793, and gained a fellowship. Starting practise as a physician at Bury St. Edmunds in 1789, he soon removed to London; but being beaten in a competition for the post of physician to St. George's Hospital in 1800, he vowed to devote himself to scientific research. His researches are pre-eminently fruitful both in chemistry and in optics. He discovered new compounds connected with the production of gouty and urinary concretions; and in the ore of platinum distinguished two new metals, palladium (1804) and rhodium (1805). By his method of rendering platinum malleable he made £30,000; and some other practical discoveries were also highly lucrative. His contributions to optics were the reflecting Goniometer, the Camera Lucida, the discovery of the dark lines in the solar spectrum and of the invisible rays beyond the violet, and an immensity of valuable observations on refraction. He did much to establish the theory of definite proportions, and demonstrated the identity of galvanism and electricity. He was elected fellow of the Royal Society (1793), its second secretary (1806), and a fellow of the Astronomical Society (1828). He died December 22. See his thirty-nine "Memoirs" in the *Philosophical Trans.* for 1809-29, and George Wilson's *Religio Chemicæ* (1862).

WOOD, GEORGE BACON (1797-1879). An American chemist and author; born in Greenwich, N. J., March 13; and educated in New York, also at the Pennsylvania University, where he graduated in 1815. In 1817 he was licensed to practise medicine, and for the two years next succeeding, delivered a series of lectures on chemistry, in Philadelphia; from the latter period until 1860 was continuously employed as a professor of chemistry in the Pennsylvania University and Philadelphia College of Pharmacy. He also provided for the maintenance of five professorships in the former institution, and by his will directed that a sum of money should be appropriated to the support of a ward in the Hahn Hospital, Philadelphia. He was the author (in conjunction with Professor H. Bache) of the United States *Dispensatory*, and of numerous works on *materia medica*; also of a *History of the University of Pennsylvania* (1827). He died in Philadelphia, March 30.

WOODWARD, JOSEPH JANVIER (1833-84). An American surgeon; born in Philadelphia, October 30; graduated at the University of Pennsylvania medical department in 1853; practised in Philadelphia and was placed in charge of the surgical clinics in his *alma mater*; served throughout the Civil War, first in the field, and later in the surgeon-general's office in Washington, attaining the rank of lieutenant-colonel. He made a special study of microscopy and was given the rank of major in the regular army. He was a consulting physician in attendance upon President Garfield when the latter was dying, and was a member of the National Academy of Sciences. He was a constant investigator and contributed numerous papers to scientific publications. Among his collected writings is *Chief Camp Diseases of the U. S. Armies* (1863). He died August 17.

WUNDERLICH, KARL AUGUST (1815-77). A German physician; born at Sulzam-Neckar. He was educated at Stuttgart, Tübingen, and Paris. In 1846 he was appointed professor in the University of Tübingen and director of its clinic, and in 1850 he accepted a call to Leipzig, where he carried on his important investigations of temperatures. The *Archiv für physiologische Heilkunde*, founded by him in 1841, became the organ of the most advanced medical thought. Wunderlich published *Versuch einer pathologischen Physiologie des Blutes* (1844); *Handbuch der Pathologie und Therapie* (1846-54); *Grundriss der speziellen Pathologie und Therapie* (1858); *Geschichte der Medizin* (1859); and *Das Verhalten der Eigenwürme in Krankheiten* (1868).

WURTZ, CHARLES ADOLPHE (1817-84). French chemist; born at Strassburg. He wrote numerous works, of which *The Atomic Theory* (1880), *Modern Chemistry* (4th ed. 1885), etc., have been translated. See *Life* by Gautier (1884).

Y

YOUNG, JAMES (1811-83). Of paraffin fame, was the son of a Glasgow joiner, and himself for a while one, but attended classes in chemistry, etc., at Anderson's College, and in 1832 became assistant to Prof. Graham. In 1837 he obtained a post in University College, London. As manager of chemical-works near Liverpool (1839) and near Manchester (1843) he discovered cheaper methods of producing stannate of soda and chlorate of potash; and it was his experiments (1847-50) which led to the manufacture of paraffin-oil and solid paraffin on a large scale.

YOUNG, THOMAS (1773-1829). Physicist; born of Quaker parentage at Milverton, Somerset, studied medicine at London, Edinburgh, Göttingen, and Cambridge, and started as doctor in London in 1800, but devoted himself to scientific research, and in 1801 became professor of Natural Philosophy to the Royal Institution. His *Lectures* (1807) expounded the doctrine of interference, which established the undulatory theory of light. He was secretary to the Royal Society, and did valuable work in insurance, hæmodynamics, and Egyptology. See *Life* by Peacock (1855) and Prof. Tyndall's *New Fragments* (1892).

Z

ZENKER, FRIEDRICH ALBERT VON (1825-98). A German physician, celebrated for his discovery of trichiniasis. He was born in Dresden, and was educated in Leipzig and Heidelberg. Attached to the city hospital of Dresden in 1851, he added, in 1855, the duties of professor of pathological anatomy and general pathology in the surgico-medical academy of that city. In 1862 he became professor of pathological anatomy and pharmacology at Erlangen. Three years afterwards he assumed, with Ziemssen, the editorship of the *Deutsches Archiv für klinische Medizin*. In 1895 he retired from active service. His important discovery of the danger of trichinæ dates from 1860. In that year he published *Ueber die Trichinenkrankheit de Menschen* (in vol. xviii of Virchow's *Archiv*). This was followed by *Beiträge zur normalen und pathologischen Anatomie der Lungen* (1862); *Ueber Staubinhalationskrankheiten der Lungen* (1866); *Die Krankheiten der Oesophagus* (in vol. vii. of Ziemssen's *Handbuch der speziellen Pathologie und Therapie*, 1877).

ZIEMSSSEN, HUGO WILHELM VON (1829-1902). A German physician; born in Greifswald. He studied there, at Berlin, and at Würzburg. In 1863 he was called to Erlangen as professor of pathology and director of the clinic, and in 1874 to Munich as director of the general hospital. He made advances in electro-therapeutics, introduced the cold water treatment for typhoid fever and lung inflammation, and became an authority on diseases of the larynx and digestive canal. At the university he founded an institute for clinical medicine, whose valuable reports he published (1884-93). He wrote: *Die Elektrizität in der Medizin* (1857; 5th ed. 1887); *Pleuritis und Pneumonie im Kindesalter* (1862); *Die Kaltwassbehandlung des Typhus* (with Immermann, 1870); *Ueber die Behandlung des Magenges-*

chwürs (1871); *Klinische Vorträge* (1887-1900). In collaboration with prominent specialists he published his great *Handbuch der speciellen Pathologie und Therapie* (17 vols., 3d ed. 1886 et seq.), and the *Handbuch der allgemeinen Therapie* (1880-84), both of great value to the entire science of medicine.

THE
HISTORY OF MEDICINE.

FROM ITS ORIGIN TO THE COMMENCEMENT OF THE NINETEENTH
CENTURY.

BY J. BOSTOCK, M.D., F.R.S.

HISTORY OF MEDICINE,

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CHAPTER I.

Introduction—Division of the History of Medicine into three great Chronological Periods—History of Medicine previously to its Introduction into Greece—Origin of Medicine—State of Medicine among the Egyptians—Among the Assyrians—Among the Jews—Introduction of Medicine into Greece—Chiron—Æsculapius—Machaon—Podalirius—The Asclepiadæ—Records in the Temples of Æsculapius—Ancient Inscriptions—Pythagoras—Democritus—Heraclitus—Acron—Herodicus—Gymnastic Medicine.

Although the primary object of this treatise is to present a view of the history and progress of practical medicine, yet it will be impossible to avoid entering occasionally into the consideration of the various theories and speculations which have so generally prevailed in the science. Medical theory and practice have been so intimately blended together, that it would be useless to attempt to separate them. The terms which are employed in works of the most practical nature are, for the most part, derived from the theory which was current at the time of their publication; and even the narrative of facts, and the direct details of experience, are, with a few exceptions, deeply tinged with the prevailing doctrines of the day, or with the indi-

vidual speculations of the writer. Those who are versed in medical science, and who are acquainted with the relation which it bears to the other physical sciences, with the mode in which it is acquired, and the nature of the evidence on which it rests, will easily perceive that, in this department, it is peculiarly difficult to separate facts from hypothesis. It may, however, be asserted, that until this be accomplished, medicine can never be placed upon the basis of induction, and that this alone can give it that stability which may entitle it to be regarded as a correct science. In its present condition, it will be impossible to do more than to approximate to so desirable a state; but it will be a special object of attention in the following pages to endeavour to point out the limits between practice and theory, between facts and the opinions that have been deduced from them.

When we take an extended view of the progress of medicine, tracing it from its scanty sources, in the most remote periods of society, and observe its course, as gradually augmented by the stores of Grecian and Roman learning, obscured by the darkness of the middle ages, and again bursting forth in the copious and almost overwhelming streams of modern literature, we are naturally led to separate the narrative into three divisions, corresponding to the three great chronological periods. The first of these will comprehend the history of practical medicine, from the earliest records which we possess to the decline of Roman literature; the second will contain an account of the state of the science through what are termed the dark ages until the revival of letters; the third will commence with the establishment of the inductive philosophy, and be continued to the commencement of the nineteenth century.

In tracing the history of this science from its earliest records, it will not be necessary to devote much time to a subject which was formerly discussed with great learning and acuteness, viz. the origin of medicine. It

may be sufficient to remark, that in proportion to the progress of civilization or refinement, attempts would be made to remove or alleviate the diseases, and to repair the injuries to which the body is constantly incident. Subject as it is at all times to the influence of various noxious agents, and to a constant derangement of its functions, to painful affections of various kinds, and to the loss or depravation of its powers or actions, we must conceive that mankind would be anxious to remove or relieve these evils. The means that would be employed must have been, in the first instance, extremely imperfect, and frequently ill-directed. They may have been suggested by the effects of certain kinds of food, or by the operation of certain external agents on the body: some analogies may have been derived from the spontaneous actions of the system, by observing the natural efforts of the constitution to remove certain causes of disease, or to relieve the patient when suffering from their effects. Thus, in the earliest periods of society, mankind must have been aware of the relief which was obtained in the derangements of the alimentary canal by an evacuation of its contents, and would probably have discovered, incidentally, that certain vegetable substances promoted this operation. In the external injuries to which the body is subject, more especially in a rude state of society, means would early be had recourse to for procuring present ease from pain, or for removing the obvious danger to life which would so frequently follow from various causes. It would soon be found that the pain was diminished by excluding the wounded part from the air, or from other extraneous substances; that by certain modes of pressure, the flow of blood might be restricted; and that in some cases an increased and in others a diminished temperature gave immediate ease to the patient, and tended to promote the ultimate cure. A rude species of medical and surgical practice of this description has been in all cases found to exist in newly-discovered countries, even when in the most barbarous state; while

it has been observed, generally, that the improvement in the healing art has been nearly in proportion to the advancement of the other arts of life, and to the gradual progress of knowledge on all subjects intimately connected with our existence or welfare.

The historical records which we possess respecting the progress of practical medicine are scanty and uncertain; but so far as they extend, they coincide with the view of the subject taken above. The writers who have investigated this point with the greatest learning and assiduity, inform us that Egypt was the country in which the art of medicine, as well as the other arts of civilized life, was first cultivated with any degree of success, and that it had advanced so far as to have become a distinct profession. We are not, however, informed in what degree or to what extent that distinct appropriation was carried; whether medicine was made the exclusive business of certain individuals, who were regularly instructed for that purpose; whether it was attached to certain public functionaries, especially to the priests; or whether persons in different situations applied themselves to the practice of medicine from a real or supposed superiority in their skill and in their knowledge of the treatment of diseases. The probability, however, is, that the priests of the Egyptians were at the same time their physicians. This appears to have been the case among the Jews and the Greeks, who are supposed to have borrowed from the Egyptians many of their institutions; and indeed it seems to be the natural progress of society in its earlier period, when the priests were generally the depositaries of knowledge of all kinds, and when they confined it as much as possible to their own use, for the purpose of maintaining their influence over the rest of the community.

From some remarks which are made incidentally in the writings of the ancients, respecting the medicine of the Egyptian priests, it would appear that it consisted in a great measure of the employment of magical in-

cantations, and, so far therefore as it effected the cure of disease, must have operated through the medium of the imagination. This has been in all cases the first step in the art of medicine, if it may be so called, and its efficacy must have been in exact proportion to the ignorance and superstition of the people on whom it was exercised.*

A circumstance respecting the practice of medicine in Egypt is mentioned by Herodotus as existing when he visited that country, and which it may be presumed was transmitted from a much earlier period, that certain individuals treated certain diseases only.* This division into separate branches might, at first view, seem to indicate a degree of manual dexterity and of minute observation in certain departments. But, independent of any other consideration, we may rest assured that the science must have remained in a state of complete degradation, when we bear in mind that it was the custom in Egypt, as it is in the present day among many of the nations of the East, to transmit the same occupations from father to son, through a number of successive generations. This practice, although it may be favourable to the perfection of an art, or even of a science, in some of its minute details, must furnish an almost insurmountable obstacle to its general improvement, or to the development of the powers and faculties of the human mind.

Although we are in the habit of considering Egypt as the parent of the arts and sciences, the empire of Assyria has been supposed, by many learned men, to possess a greater claim to this distinction. Perhaps the priority of invention may be justly awarded to the Assyrians, but the memorials which they have left behind them are so scanty, that the degree of excellence to which they have arrived is almost entirely conjectural. The priests of this nation, as in all other cases, appear to have been the depositaries of all the learning

* *Le Clerc*, Hist. de la Médecine, par. i. liv. i. chap. 12.

* *Euterpe*, §. 84.

of the times, and of that of medicine among the rest. We have reason to suppose that their practice consisted of little more than the dexterous application of magical arts, and such other means as tended to impress the minds of the people with a sense of their power over the operations of nature, while any actual information which they possessed was carefully concealed under the guise of mystery and superstition.†

In the writings of Moses there are various allusions to the practice of medicine among the Jews, and more especially with regard to the treatment of leprosy. The priests appear in this, as in other cases, to have been the practitioners; the treatment consisted principally in certain regulations for the purpose of promoting cleanliness and preventing contagion, together with various ceremonies, which, so far as they could affect the patient, must have acted entirely on the imagination.‡ So little is known respecting the state of the arts and sciences in the other countries of the East, at these remote periods, that it is scarcely necessary to allude to them in this place. We shall only remark, that the imperfect and scanty notices which we possess on this subject would lead us to conclude, that the practice of medicine was even in a less advanced state than among the Egyptians, its progress being regulated by the greater or less degree of refinement or civilization of the respective countries, but in no case having advanced beyond the state of implicit credulity and gross superstition.§

† *Herodotus*, *Clio*, *passim*. *Enfield's History of Phil.* v. i. p. 25 et seq.

‡ *Leviticus*, chap. xiii.-xv. *Michaelis*, on the Laws of Moses, chap. 4, art. 210-11.

§ For further information respecting the state of medicine among the Egyptians and the other nations of antiquity, previously to the Greeks and Romans, the reader is referred to the following works. *Herodotus*, *Euterpe et Clio*, *passim*. *Diodorus Siculus*, lib. i. sect. 25, 82. *Plinius*, lib. vii. cap. 56, lib. xxix. cap. 1. *Plutarchus*, *De Iside et Osiride*. *Josephus*, *Antiq. Jud.* lib. viii. cap. 2, §. 5. *Clemens Alexandrinus*, à *Potter*, *Stromat.* lib. vi. p. 758. *Conring*, *Introductio Art. Med.* cap. 3, §. 2. et *De Hermet. Med.* *passim*. *Barchusen*, *Diss.* no. 1 et 7. *Gruener*, *Analecta*, *Dis.* 1, *De Ægyptiorum Veterum Anatomie*. *Schulz*, *Hist. Med.* p. 1, §. 1. *Le Clerc*, *par.* 1, liv. i. chap., 1-8. *Sprengel*, *Hist. de la Med.* par. *Jourdan*, §. 2, chap. 1-3. *Enfield's Hist. of Phil.* v. i. p. 86, 7 et alibi. *Fauve*, on the Egyptians and Chinese, part 1, §. 2. *Bryant's Analysis*, v. 2, p. 324 et seq. et in multis aliis locis. *Cabants*, *Révol. de la Méd.* chap. 2, §. 1. *Ackermann*, *Institut. Hist. Med.* p. 1, chap. 1, 2. *Lauth*, *Hist. de l'Anatomie*, liv. 1. *Blumenbach*, *Introductio in Historiam Medicinæ Litter.* §. 1-3.

After having given an account of the state of medicine among the ancient Egyptians and other contemporary nations, as far as can be gleaned from the scanty records that remain on this subject, we must follow it into Greece, and trace its progress from the period of its first introduction in the remote and semi-fabulous ages of their *demigods* and *heroes*, until it acquired the rank of science under the genius of Hippocrates. It is generally admitted, that although Greece cultivated the arts and sciences with so much success, yet, in the first instance, she borrowed them from the neighbouring nations; principally, as it would appear, from Egypt, and in some cases from Phœnicia. || To certain individuals who migrated from these countries, the Greeks themselves were in the habit of referring the introduction of many of the most useful inventions; and during a considerable space of time all those who were desirous of acquiring a larger share of knowledge, either theoretical or practical, than was possessed by their countrymen, visited Egypt, as the great storehouse of science and learning. It is from this cause that we find so much analogy between the divinities that were worshipped in the two countries, as inventors or patrons of the various arts and sciences. For although they acquired new names on their being transferred into Europe, yet their attributes, and even their forms, clearly demonstrate their origin. This is particularly the case with respect to medicine, so that in the Orus and Thouth of the Egyptians we may recognize the prototypes of the Apollo and Hermes of the Greeks.*

It is not until comparatively at a late period, approaching to that of the Trojan war, that we find the names of actual personages who practised medicine in Greece: and of these, it is probable that some were natives of either Africa or Asia, who brought with them the information which they had acquired in their respective countries. Of those whose history is better

|| Vide *Bryant*, ubi supra, et v. ii. p. 426 et seq. et alibi.

* *Haller*, *Bibl. Med. pract. lib. 1. §. 7, 8.* *Hundertmark*, in *Ackermann*, *Opuscula*, *Exerc. no. 1.*

known, and who were acknowledged to be of Grecian origin, it was the general custom to travel into Egypt for the purpose of obtaining a knowledge of their art, and with this view they submitted to a system of rigid discipline, and to a variety of irksome and burdensome ceremonies; and after all this laborious process, so far as the science of medicine is concerned, the result seems to have been little more than the knowledge of magic and incantations, with some rude notions respecting the application of external remedies for the cure of wounds and of cutaneous diseases, with a very imperfect idea of the anatomy of the human body, and a very inadequate conception of its functions.†

The first native of Greece who is more particularly singled out, as having introduced the art of medicine to his countrymen, is the centaur Chiron. There is much mystery attached to his character and to every thing connected with him, but what we may consider as the most probable conclusion is, that he was a prince of Thessaly, who lived about the thirteenth century before the Christian era; that he was distinguished above his contemporaries for his knowledge of the arts of life; and that, after the manner of his countrymen, he was frequently seen on horseback, so as to give rise to the fabulous account of his compound form. He is particularly celebrated for his skill in medicine and in music; a combination, it may be remarked, that was said to have existed in many other individuals. We are not informed by what means he obtained his superior knowledge in medicine; but there are various circumstances which lead us to conclude that it was at that time regarded rather as a part of the education of all men of rank, than as attached to a particular profession. We accordingly find that he instructed the Argonauts in medicine, and the heroes who were engaged in the siege of Troy; and that all the kings

† *Herodotus*, Euterpe, passim. *Diodorus Siculus*, lib. i. passim. *Josephus*, *Antiq. Jud.* lib. viii. cap. 2. §. 5. *Odysseus*, xix. 656 et seq. *Æneis*, vii. 753 et seq.

and warriors of that period were more or less acquainted with the treatment of wounds, and even with the practices which were adopted for the cure of internal diseases.‡

But although Chiron has the reputation of having introduced the art of medicine into Greece, it is to his pupil Æsculapius that, by the common consent of antiquity, is ascribed the merit of having first devoted himself to the cultivation of medicine as a science, and of having made it a distinct object of pursuit. The improvements which he made in the art were so considerable as to have induced his countrymen after his death to pay him divine honours, to designate him as the god of physic, to erect temples to him in various parts of Greece,§ and to derive his origin from Apollo himself. His history, when divested of all the fabulous appendages that were attached to it by his contemporaries, appears to be, that he was a native of Epidaurus, that he was exposed in his infancy, probably in consequence of his illegitimate birth, that he was accidentally discovered by a shepherd, and placed under the care of Chiron. His death was said to have been caused by the jealousy of Pluto, in consequence of the number of individuals whom he rescued from the grave; from which tale we may at least conclude that his reputation, as a successful practitioner, must have been much higher than that of any of his contemporaries.||

According to the custom of that age, he transmitted his profession to his sons Machaon and Poçalirius, who accompanied the Greeks in the Trojan expedition, and are celebrated in various passages of the Iliad for their

‡ Ilias, xi. 636 et seq. *Sprengel*, t. i. p. 112, 3. *Ackermann*, par. 1, cap. 3, §. 25-40.

§ *Pausanias*, lib. i. cap. 21; ii. 10; ii. 13; iii. 22; iv. 31; vii. 21; vii. 23; vii. 27; viii. 25. *Strabo*, lib. viii. p. 592; ix. 668; xiii. 899; xvi. 1097, a Casaubon. Amst. 1707. *Le Clerc*, par. 1, liv. i. ch. 20.

|| *Diodorus Siculus*, lib. iv. §. 71. *Hyginus*, fab. 49 et alibi. *Le Clerc*, par. i. liv. i. ch. 11-16. *Ortelius*, *Capita Deor.* lib. ii. in Gronovii *Thes. Græc.* t. vii. p. 278 et seq. *Montfaucon*, *Antiq.* v. i. book ii. ch. 1, 2. *Sprengel*, t. i. p. 119 et seq. *Ackermann*, par. 1, cap. 3, §. 41-59; and especially the second dissertation in his *Opuscula*, by *Günzius* and *Richter*.

medical skill.* From the incidental mention that is made by Homer and the early Greek writers of the nature of the remedies that were employed by these individuals or their contemporaries, it will appear that their practice was principally surgical, and nearly confined to the treatment of wounds, and that, with respect to internal diseases, these were for the most part conceived to be the immediate infliction of the Deity, and were therefore abandoned as incurable, or at least were to be obviated only by charms and incantations, and that the arts of magic formed no inconsiderable part even of their surgical practice.†

The practice of medicine remained for a considerable time hereditary in the family of Æsculapius, and in a great measure confined to it. His descendants obtained the name of Asclepiadæ; they were the priests of his temples, and presided over and directed the rites and ceremonies.‡ These temples, indeed, became a species of hospitals to which patients resorted from all quarters for the relief of the diseases with which they were affected. Under the direction of the priests of these temples they underwent a variety of ceremonies, the immediate effect of which must have been principally upon the imagination. Some, however, of the practices which were enjoined were of a dietetic nature, and were directly conducive to temperance and cleanliness; such as frequent ablution, and the abstaining from certain kinds of food. To these, if we add that the temples were generally erected in healthy situations, that the patients enjoyed rest and leisure, and that the mind was interested by a succession of new and pleasing impressions, we may suppose that they would be placed under circumstances not a little resembling those which are found so conducive to health by the invalids who frequent the medicinal

* *Le Clerc*, par. 1, liv. i. ch. 17. *Sprengel*, t. i. p. 127 et seq. *Goulin*, Encyc. Méth. Médecine, "Anciens Médecins." This article may be advantageously consulted on the subject of the Greek and Roman physicians.

† *Ilias* xi. 636 et seq. *Odyss.* xix. 456 et seq.

‡ *Sprengel*, t. i. p. 168 et seq.

springs and other analogous establishments of modern times. §

Although the accounts that have been transmitted to us respecting Æsculapius would lead us to conclude that he was a real personage, who actually possessed a greater degree of medical skill than any of his contemporaries, yet his whole history is so involved in fable and mystery, that it is impossible to obtain any correct idea of the details of his practice. It has been observed above that it was probably, in a great measure, surgical, and even confined almost exclusively to the cure of wounds or recent injuries. The treatment of these may be considered so far judicious as it was simple; it consisted in removing all extraneous bodies, in placing the parts as much as possible in their natural position, in fomentations and ablutions, and in the application of certain vegetables, which were supposed to be possessed of balsamic or styptic properties. Wine and other articles of a more stimulating nature were also used, while oleaginous substances were employed nearly with the same intention as in modern times, to defend the part from the air or other external agents, together with bandages and other means of mechanical support. We have no distinct evidence how far internal remedies were administered; for the most part they relied on magical arts and incantations, and although we have reason to believe that certain vegetable products were occasionally employed as internal remedies, we are scarcely able to discover what was the object of the practitioner, and we are frequently unable to ascertain what were the plants that were employed. ||

But scanty and imperfect as is our knowledge of the state of medicine in the age of Æsculapius, after his death and that of his sons Machaon and Podalirius we have a long period, extending even to several centuries,

§ *Le Clerc*, par. i. liv. ii. ch. 2-6. *Schulz*, par. i. §. 2, cap. 4. *Sprengel*, t. i. p. 153 et seq. *Cabanis*, p. 59, 60.

|| *Celsus*, lib. i. præf. *Plinius*, lib. xxix. cap. 1. *Le Clerc*, par. i. liv. i. ch. 15. *Schulz*, p. i. §. 2, ch. 4. *Sprengel*, §. 2, ch. 4. 5. *Cabanis*, ch. 2, §. 1.

during which we have still less information respecting the history and progress of the science. We have not a single improvement of any importance recorded as having taken place during this long interval, nor have we the names of any individuals transmitted to us who were of sufficient eminence to be distinguished above their contemporaries. We learn that the practice of medicine was entirely confined to the Asclepiadæ, who were the guardians or superintendents of the temples that were erected in honor of Æsculapius. It may be inferred from the very scanty materials which we possess on the subject, consisting entirely of allusions or indirect accounts, scattered through the works of the older poets and historians, that they sedulously kept up the system of rites and ceremonies, which had been handed down to them from still more ancient practitioners, that they carefully preserved to themselves the sole management of the art over which they presided, and we cannot doubt made use of the influence which they acquired over the minds of their contemporaries for the purposes both of gain and of ambition.* But although we regard the general system of the priests of Æsculapius to be nothing more than a tissue of mystery and delusion, it is very probable that the ample opportunities which they possessed of witnessing the phenomena of disease in all its forms, might enable them to obtain much valuable information respecting the nature and tendency of the morbid actions of the body, and of the effects of certain agents upon them. Men possessed of superior talents and sagacity would naturally profit by these advantages, and we accordingly find that some of these temples acquired a high degree of celebrity, in consequence of the supposed skill of the priests that were attached to them. These opportunities of acquiring experience were much facilitated by a practice which generally prevailed among

* *Lucian*, in his "Philopseudes," gives an account of various medical superstitions which prevailed at a later period, many of which were probably transmitted from the empirics of antiquity. See Tooke's *Trans.* v. i. p. 27 et seq.

the patients, whenever they were cured of their diseases, of depositing in the temple a votive tablet, on which was inscribed a narrative of the case, including a statement of the symptoms of the disease, and the means adopted for its removal. The temples were thus converted, to a certain extent, into schools of medicine, and as these records were religiously preserved, they became the repositories of much important information, which must have gradually led to an improvement in the art. Of the numerous temples that were dedicated to Æsculapius, there were three which acquired peculiar celebrity, those of Cos, of Gnidos, and of Rhodes; we are informed that Hippocrates made great use of these records, and it has even been supposed that one of the treatises which is generally ascribed to him, "Coacæ Prænotiones," was composed from the records which he procured from the temple of Cos.

Some ancient inscriptions have been discovered by the researches of the learned antiquaries of the last century, which would appear to consist of memorials of this kind; and from these specimens we may form some idea of the nature of the information that would be conveyed by them. For the most part they state little more than the name of the disease, together with a very brief account of the means adopted for its relief, which in many cases depended entirely upon certain ceremonies, and in others upon the application of remedies, which, we may venture to assert, could have no physical operation.† Still, however, some experience of the nature and treatment of disease might have been conveyed by their means, and of this we may presume that an individual of a sagacious mind would have availed himself for the improvement of his art.

Among the few circumstances that are transmitted to us respecting the principles and practice of the Asclepiadæ, we are informed that the priests connected

† *Gruter*, Corp. Inscrip. a Grævio, pl. 17. et alibi. *Ackermann*, Opuscula, Diss. 3, §. 3, by *Hundertmark* and *Carpsov*.

with the two rival establishments of Cos and Gnidos devoted their attention, in some measure, to different objects; those of the former assumed more of a philosophical cast, attempting to unite reasoning with experience, while the latter attached themselves solely to the observation and collection of mere matters of fact. Hence it would appear that a foundation was thus early laid for the two great sects of the Dogmatists and the Empirics, which long divided the medical world, and the influence of which is, even at this day, not altogether destroyed. I may remark, however, that the philosophy of the school of Cos, if it may be so called, was founded upon such totally incorrect principles, and upon so fallacious a basis, that little immediate benefit was derived from it, and that it was only useful so far as it might lead them to exercise their intellectual powers, and enable them to reason more correctly on medical subjects. By the mode in which Hippocrates speaks of certain practices, such as bleeding and the administration of emetics, purgatives, and other analogous medicinal agents, we may infer that they were in common use among his contemporaries, and probably had been so for a long time before him. We may in some instances obtain a knowledge of the vegetable substances that were employed in these early ages, as well as of the individuals who introduced them into practice by the names which were afterward imposed upon them by the ancients. It must indeed be obvious that the indication derived from these names is far from being decisive, as applied to any particular case; but we derive a general inference from it as to the nature of the articles employed, while they serve to point out the persons who were supposed to have been the most eminent for their skill or their science.

Some centuries had elapsed, during which the practice of medicine continued altogether in the hands of the priesthood, and under their control had remained nearly stationary. It had been exercised, for the most part, for the purpose either of direct emolument, or

for the still more selfish purpose of maintaining their influence over the minds of the people, when it began to be cultivated by a different description of persons, much more likely to produce a spirit of improvement, and from whom in reality it derived its first impulse. It was during the sixth century before the Christian era that the genuine principles of philosophy first made their appearance in Greece; and among the other topics which then became the subject of investigation, the powers and functions of the human body were examined with considerable attention. This led to an inquiry into the nature and cause of diseases, and to the means of their removal; and although a long period elapsed before much actual advance was made in the knowledge of pathology or of the practice of medicine, yet we observe the effect of a more correct mode of reasoning, and may perceive that the strongholds of mystery and superstition, although not destroyed, were at least in some degree weakened.*

The celebrated name of Pythagoras may be mentioned as the first of this class respecting whom we have any accurate information, and even his history is enveloped in much obscurity. We may, however, conclude with certainty that he devoted the greatest portion of a long life to the pursuit of natural knowledge; that he made many considerable advances in various departments of science, and among others in the knowledge of the structure and actions of the human frame. It has been supposed that he dissected the bodies of animals, and hence acquired a certain acquaintance with anatomy; and that he publicly taught what he knew on this subject to a large assembly of students, who came from all the civilized parts of Greece and Italy to Crotona, where he established his school. We are informed that, for the purpose of acquiring knowledge, he travelled into those countries which, previously to his time, were regarded as the depositories of knowledge, particularly Egypt, where he is said to

* *Sprengel*, §. 3, ch. 1.

have passed no less than twenty-two years, and probably also Chaldea and some parts of Eastern Asia. From what has been stated above, we may form some conception of the nature of the knowledge that he would obtain from these sources, and we may conclude that he must have been possessed of a very superior mind to have been capable of extricating himself from the trammels of superstition and bigotry, in which every thing connected with those countries was involved.†

We are scarcely able to determine in what degree he directly improved the practice of medicine; it is probable, however, that as he did not make it his profession, but studied it only in connection with the other branches of natural philosophy, the actual additions which he made to it were not considerable.‡ This we may also conclude to have been the case with many of his pupils, who were among the most justly celebrated philosophers of that and the succeeding age. They may all of them be regarded as belonging to the school of Pythagoras, inasmuch as they cultivated natural knowledge by means of observation, and even occasionally of a rude kind of experiment; and although none of them were exclusively devoted to the study of medicine, yet they gradually and indirectly contributed to its advancement, so as to prepare the way for one of those great and commanding geniuses who occasionally make their appearance, and by their intellectual ascendancy produce such important revolutions in the world of science: it is unnecessary to state that I here allude to Hippocrates.

During the interval from Pythagoras to Hippocrates there are few names that require any particular notice as improvers of medicine. Democritus* and

† *Diogenes Laertius*, lib. viii. cap. 1-50. *Cicero*, de Fin. v. 29. *Valer. Maximus*, viii. 7. *Ælianus*, Hist. Var. iv. 17. *Clemens Alexandrinus*, Stromat. lib. i. p. 354-7. *Fabricius*, Bibl. Græc. lib. ii. cap. 12. *Enfield*, vol. i. p. 422 et seq. *Ackermann*, Instit. Per. 2, cap. 4, 5; *Opuscula*, diss. 4, a *Kuhn*.

‡ *Sprengel*, t. i. p. 337 et seq.

* *Le Clerc*, p. 96-101. *Enfield*, vol. i. p. 422 et seq. *Barchusen*, diss. No. 1. *Sprengel*, t. i. p. 261-6.

Heracitus† were among the most illustrious followers of Pythagoras, but they became famous rather from the ingenuity with which they supported their peculiar hypotheses than from the additions which they made to actual knowledge. They applied respectively their favourite doctrines of atoms and elements to explain the phenomena of disease, and even the operation of remedies; but, it is unnecessary to say, with little real advantage. The former of these philosophers, however, deserved honourable mention from the attention which he paid to the study of comparative anatomy; and it has been conjectured that he so far rose superior to the prejudices of his age as to venture upon the dissection of the human subject.

The name of Acron is mentioned by Pliny‡ as among the first who attempted, upon any general principles, to apply philosophical reasoning to the science of medicine; but we have scarcely any knowledge of his history or character, nor have we any memorials left of the principles which he adopted.§ We may also select the name of Herodicus as having been considered the inventor of what was styled gymnastic medicine,|| which was regarded by the Greeks as a very important branch of the art. Schools for the practice of the gymnastic exercises were established in various parts of Greece, and were placed under the direction and superintendence of persons especially trained for the purpose, who took charge of the health of their pupils, and who appear to have undertaken the treatment both of the accidents which occasionally occurred in their establishments, and also, when necessary, of internal diseases. These gymnasiarchs, as they were styled, must in this way have acquired a certain degree of information respecting the nature of disease, and seem

† *Le Clerc*, p. 95, 96. *Sprengel*, t. i. p. 266-9. *Enfield*, vol. i. p. 436 et seq.

‡ *Lib.* xxix. cap. 1.

§ *Le Clerc*, par. i. liv. ii. ch. 7.

|| *Le Clerc*, par. i. liv. ii. ch. 8. *Mercurialis*, *De Arte Gymnastica*. *Schulz*, p. 192 et seq. *Barbier*, *Dict. Scien. Méd. art.* "Gymnastique." *Ackermann*, per. 2, cap. 6.

to have been considered as among the most skilful practitioners of the age in which they lived.¶

CHAPTER II.

An Account of the Opinions and Practice of Hippocrates and his Contemporaries—Remarks on the History and Education of Hippocrates—High Estimation in which he was held—Remarks on his Character and Acquirements—On his Works—Account of his Principles and Doctrines, his Physiology, Pathology, Anatomy, and Practice.

We now enter upon the history of an individual of very distinguished character and acquirements, who was destined to effect a complete revolution in his profession, and to introduce a system which may be considered as having laid a foundation for all its future improvements. The contemporaries and immediate successors of Hippocrates were so sensible of his merit, that he acquired from them the title, which he has since retained, of Father of Medicine; and it may be confidently affirmed that the science is more indebted to his genius and ability than to that of any single individual. It is a little remarkable that, notwithstanding the great celebrity which he attained, we have no very correct knowledge of his history, of the mode of his education, or of the means by which he acquired his wonderful pre-eminence. All that we are able to learn on these points with any degree of certainty is, that he was brought up among the Asclepiadæ, who were attached to the temple of Cos; that he studied medicine under Herodicus, and that he embraced the philosophical hypothesis of Heraclitus: he is also reputed to have been a lineal descendant, in the eighteenth degree, from

¶ *Plato*, De Repub. passim, et De Leg. lib. vii. Schulz has judiciously summed up, in a series of general propositions, the history and progress of medicine up to the period at which we are now arrived. p. 201, 2.

Æsculapius, and may therefore be supposed to have been devoted to the profession from an early period of life, and must have had access to all the records which were accumulated in the establishment to which he belonged. These circumstances may have had the effect of originally directing his mind to the pursuits in which he afterward became so eminent; but we must suppose that he possessed from nature a genius singularly adapted to the advancement of medical science, by which he was enabled so far to surpass all those who were placed in situations equally advantageous. We are informed that he spent a considerable portion of his life in travelling through foreign countries, partly for the purpose of obtaining information, and partly from the circumstance of his assistance being required to undertake the cure of persons of rank, to arrest the progress of epidemics, or to check the ravages of endemic diseases. The works that he left behind him are very numerous, and, considering their antiquity, they may be regarded as in a tolerably perfect state.

Unfortunately, however, to those which appear to have a just claim to be considered as his genuine productions there are appended a number of others, which it may be concluded are spurious, either written by his pupils or successors, or fraudulently attached to his name in consequence of his great celebrity. Many eminent critics have exercised their ingenuity in endeavouring to separate the genuine from the spurious writings of Hippocrates; and in such estimation was he held, that for many ages a main object with all writers on medical topics was to comment on the works of Hippocrates, to elucidate his principles by subsequent observation, or to support their respective doctrines by his authority. He is mentioned with great respect by Plato, Celsus, and Pliny, and by others among the ancients: Galen speaks of him with a degree of almost enthusiastic admiration; and at the revival of letters the most learned men of the times devoted themselves to

the elucidation of his works by glossaries, commentaries, and criticisms of all descriptions. In Italy, Germany, and France, where learning first began to revive, and where the earliest universities were established, we have, among other illustrious names, those of Alpinus, Cornarius, Hollerius, Ballonius, Mercurialis, Fernel, Heurnius, Sennert, Fœsius, Riolan, and Duret,* who, however they might differ in their opinions and practice, all coincided in regarding Hippocrates with equal respect, and considered him as having first placed the study of medicine on its correct basis.†

We are hence naturally led to inquire what were the circumstances, in the intellectual or literary character of Hippocrates, which produced this powerful impression, and perhaps we may assign the following as among the most influential. He appears to have had the sagacity to discover the great and fundamental truth, that in medicine, probably even more than in any other science, the basis of all our knowledge is the accurate observation of actual phenomena, and that the correct generalization of these phenomena should be the sole foundation of all our reasoning. Every page of Hippocrates proves that he was not without his speculations and hypotheses, but at the same time we perceive that, for the most part, they were kept in subjection to the result of observation, and that, when they appeared to be in opposition to each other, he had the wisdom to prefer the latter. Hence his descriptions of particular diseases, after all the revolutions of customs and habits, both moral and physical, are still found to be correct representations of nature, while his indications of cure, and the treatment derived from them, are generally rational and practicable. When

* In designating the names of authors who flourished after the revival of letters, it is somewhat difficult to determine whether we ought to use their actual or their latinized names: I have adopted the former where it could be done without ambiguity or the appearance of affectation.

† *Conring*, *Intr.* cap. 3. §. 8. et alibi. *Haller*, *Bibl. Med. Prac. lib. vi.*; it is entitled "Schola Hippocratica," and is carried down to the beginning of the seventeenth century.

we reflect that at this period anatomy was scarcely practiced,‡ that physiology was almost unknown, that the materia medica was nearly confined to vegetable substances, and of these to such as were indigenous to Greece and the neighbouring countries, our admiration of the skill and talents of Hippocrates will be still further increased, and we are induced to regard him as one of those rare geniuses, who so far outstrip their contemporaries as to form an era in the history of science.

With respect to the particular improvements which he introduced into the practice of medicine, I may remark that one of the first importance was the narration of individual cases of disease,—a plan which may perhaps have been suggested to him by the votive tablets deposited in the temple of Æsculapius, but upon which he so far improved as to be entitled to the merit of an inventor. The second point on which I shall remark, was his method of endeavouring to remove particular symptoms by carefully noticing what have been termed the *juvantia* and the *lædentia*, watching the effect of his applications, and proceeding, by a cautious analogy, from individual facts to more general conclusions; and hence deducing his indications of cure from the operations of remedies, not from any preconceived or abstract principles, which were generally either fallacious or inapplicable. Hence his practice may be characterized as consisting in what has been termed a rational empiricism, where we first ascertain the fact, and afterward reason upon its consequences.

In speaking of the writings of Hippocrates, it may be proper to remark, that the most complete edition of them, in all respects, is that of Fœsius, in which every circumstance is attended to that can illustrate them or render them more easily intelligible. He has given a list of all the commentaries and criticisms that had been written upon them, which, at the time of his publica-

‡ *Gruner*, *Analecta*, diss. 2. "Hippocrates, corpora humana inse-cuerit necne?" He discusses the question with much learning and candour, and decides in the negative.

tion, in the year 1595, would of themselves have formed an extensive library. It appears from this list that no less than one hundred and thirty-seven authors had published on the subject of the aphorisms alone. It was remarked above that many of the writings which are commonly ascribed to Hippocrates, or at least are published in the collection of his works, are supposed not to have been his genuine productions; and hence it has been an object of interest with many eminent critics to distinguish the one from the other. It will not be necessary for me to enter into these discussions in this place; I shall only remark, that the number of treatises which are admitted to be certainly genuine is very small, compared to the whole number popularly ascribed to him. Of those which are printed in the ordinary editions of his works, which amount to more than sixty, Mercurialis, Haller, Gruner, and other critics, conceive that there are a few only which were actually written by Hippocrates, and Ackermann has even reduced the number of the genuine works to ten.*

In ascertaining what were the real opinions and practices of Hippocrates, besides the difficulty of discriminating the genuine from the spurious productions, we have a further difficulty arising from the peculiarity of his style. This is admitted to be brief and abrupt, and to be full of ideas, compared with the number of words employed to convey them; so that it appeared somewhat obscure even to his contemporaries and immediate successors. Erotianus, who lived in the first century of the Christian era, thought it necessary to write a glossary for the express purpose of elucidating his phraseology; and the immense number of commentaries which have appeared, and which continued to be published until the commencement of the eighteenth century, must be regarded, not only as a

* *Conring*, cap. 3, §. 8. *Le Clerc*, par. 1, liv. iii. ch. 30. *Mercurialis*, *Censura et Dispositio Operum Hippocratis*. *Gruner*, *Analecta*, No. 2. *Kühn*, *Bib. Med.* p. 167-171, for the editions of Hippocrates. *Haller*, *Bibliotheca Med. Prac.* lib. i. §. 17-21. *Eloy*, *Dict. hist.* in loco. *Ackermann*, *Inst. Hist. Med.* par. 1, cap. 8, §. 102. *Blumenbach*, *Introd.* §. 34. *Goulin*, *Enc. Méth. Médecine*, "Hippocrate," p. 202-5.

tribute to his extraordinary merit, but, in some measure, as an indirect censure of his style. But after making all due allowance for these peculiarities, after rejecting all the doubtful works and obscure passages, and resting more upon the general scope and tendency of the treatises than on particular words and phrases, we have sufficient evidence left us of the nature of his principles, both as regards theory and practice. Although it is principally in the latter capacity that we are now to regard Hippocrates, yet it will be proper to make a few remarks upon his acquirements in the analogous departments of science.

With respect to his philosophical tenets, it appears that the father of medicine must be classed generally among the Pythagoreans, and in the particular sect or school of Heraclitus. The leading doctrine of this philosopher was, that fire is the prime origin of all matter, and that by the collision and peculiar combination of its particles, which are in perpetual motion, the four elements are produced.† From this doctrine Hippocrates derived his leading principles of pathology; it lies at the foundation of all his medical hypotheses, and is brought forward in various parts of his works. But although, like all his contemporaries, and indeed nearly all his successors up to the present day, he assumed certain theoretical principles; yet, as we remarked above, he had the extraordinary sagacity to perceive the necessity of detaching medicine from what was then styled philosophy. He professed to examine the phenomena of disease in the first instance, to ascertain what were the natural powers and properties of the animal frame, how far these were affected by external circumstances and by morbid causes, and hence to derive his curative indications and his mode of treatment. It is in the writings of Hippocrates that we observe the first traces of what is properly styled physiology, *i. e.* an account of the functions and powers

† *Enfield*, b. 2, c. 14, v. 1. p. 436 et seq.

of the living body. Although some of his opinions were derived from the school of Pythagoras, and savour of its mysticism and obscurity, yet others appear to have been original, and founded upon a much more correct and philosophical view of the subject. We owe to him the invention of the hypothesis of a principle, to which he gives the appellation of nature (*φύσις*), which influences all parts of the corporal frame, superintends and directs its motions, and which is possessed of a kind of intelligence, so as to promote all the actions which are beneficial, and repress those which have an injurious tendency. In addition to this general principle, he conceives of others of a subordinate nature, which he styles powers (*δυνάμεις*), which are more particularly concerned in the action of the various functions of the body. The body itself is supposed to consist of the four elements, combined in different proportions in different individuals, so as to produce an original difference in the constitution of the body, giving rise to the four temperaments. These influence both the intellectual and the corporeal part of our frame, and lay a foundation for disease independent of circumstances, and cause these circumstances to operate in different modes and in different degrees in different individuals.

One of the leading pathological doctrines of Hippocrates was, that the fluids are the primary seat of disease; a doctrine which, under the denomination of the Humoral Pathology, became the prevailing opinion of all sects and of all theorists, until the commencement of the eighteenth century. The combination of the four elements with the four states or qualities with which they were affected—of hot, cold, moist, and dry—gave rise to the four fluids or humours of the body—blood, phlegm, bile, and black bile,—which originally tended to produce the four temperaments, and which in their turn contributed to the excess or defect of each of the humours.

Another of the most important doctrines of Hippo-

crates is that of crises, or the natural tendency of diseases to a cure at certain stated periods, depending upon a natural train of actions, which, when proceeding in their due course, terminate in the removal of the morbid action. These supposed crises were, for the most part, evacuations of various kinds, especially by the bowels or the skin; and hence the regulation of these evacuations led to his most important indications, and became a main part of his practice. There is no subject on which Hippocrates showed more sagacity and accurate observation than in watching the effect of external agents upon the system,—such as temperature, the influence of the atmosphere, the effect of particular situations, of the seasons, and other analogous circumstances. In most of these cases the causes were obscure, and he frequently erred in his attempts to explain them; but his observations were correct, and contributed materially to the success of his practice.

The extent of knowledge which Hippocrates possessed on the subject of anatomy has given rise to much learned discussion. While his admirers were unwilling to admit that he was deficient in any of the departments of medical science, and attempted to prove that he had acquired a correct knowledge of the structure of the body, it has been contended, on the other hand, that on this point his information was very imperfect. This may be readily supposed to be the case from the abhorrence with which the dissection of the human subject was regarded at that period, and from the little attention which was paid even to comparative anatomy. There are likewise other considerations of an especial nature, which lead us to conclude that he had little knowledge of the internal structure of the body, or of the relation of its different parts to each other. Notwithstanding, therefore, the claim which has been set up for Hippocrates, by some of his devoted advocates, to a knowledge of the circulation of the blood, and other claims equally extravagant and unfounded, we may conclude, with the learned and candid Le

Clerc, that the knowledge which Hippocrates possessed of anatomy was little, if at all, superior to that of his contemporaries.*

After these brief observations on the theoretical doctrines of Hippocrates, and of the knowledge which he possessed in the various departments of medical science, we must conclude this chapter with a somewhat more minute account of his practice. Although he has published no regular treatise on practical medicine, nor laid down any specific rules on this subject, he has given us, in several parts of his works, a minute detail of his treatment of various diseases, so that we are enabled to ascertain, with considerable minuteness, the general principles on which he acted, as well as the mode in which he applied them. The great principle which directed all his indications was the supposed operation of "nature," to which we have referred above, in superintending and regulating all the actions of the system. The chief business of the physician is to watch these operations, to promote or suppress them according to circumstances, and perhaps, in some rare cases, to attempt to counteract them. The tendency of this mode of practice would be to produce extreme caution, or rather inertness, on the part of the practitioner, and we accordingly find that Hippocrates seldom attempted to cut short any morbid action, or to remove it by any decisive or vigorous treatment. Considering the state of knowledge on all subjects when he lived, it must be admitted that this plan of proceeding was much more salutary than the opposite extreme, and that it had likewise the good effect of enabling the practitioner to make himself better acquainted with the phenomena of disease, and, by observing the unaided efforts of nature, to form his indications with more correctness, and to determine to what object he ought more particularly to direct his attention. It has been remarked, that a man who is possessed of an acute and

* *Le Clerc*, par. 1, liv. iii. ch. 3. *Schulz*, per 1, sec. 3, cap. 2, §. 1-8. *Sprengel*, t. i. p. 302 et seq. *Gruner*, *Analceta*, No. 2. *Lauth*, liv. iii. passim.

penetrating genius, however strongly he may be attached to a favourite hypothesis, contrives to adapt it to the information which he acquires; and this was in some measure the case with Hippocrates. For, notwithstanding the grand principle of the all-sufficient and unerring superintendence of nature, we have another general principle brought into view, which appears altogether of an opposite tendency, viz. that a disease is to be cured by inducing a contrary state of the system, or a contrary action in the morbid part. Thus, repletion is to be relieved by evacuation, and the effect of excessive evacuation to be removed by inducing repletion; the excess or defect of any of the humours or qualities is to be relieved by the employment of such means as may augment or diminish the contrary humour or quality. Perhaps it may be said that, in these cases, the practitioner is in fact only anticipating the operation of nature, or producing that change which would naturally ensue, were there not some unusual counteracting cause which prevented or repressed it. But it is of comparatively little consequence in what way he reconciled this apparent discordance; we have every reason to feel assured that this mode of treatment is frequently correct, and Hippocrates evinces the superiority of his genius by not suffering his judgment to be warped, even by the influence of a favourite hypothesis.

A third principle which very materially affected the practice of Hippocrates was the doctrine of critical evacuations, to which we have alluded above. As diseases were supposed to originate in the prevalence of some morbid humour, so when they are suffered to run their course without interruption, they are relieved by the discharge of the humour, and consequently the promotion of this discharge becomes an important indication, which it is often easy to accomplish, and which proves very effectual. Hence an important part of his practice consisted in the employment of evacuations of various kinds, and especially of purgatives, of which

he used a great variety, and administered them with great freedom. This, indeed, was the only part of his practice which can be considered as decidedly active, but even here we do not perceive that he transgressed the limits of prudence, while in the selection of the remedy and its adaptation to each particular case, he manifested considerable judgment and sagacity. With the same intention he prescribed diuretics and sudorifics: he drew blood both by the lancet and the scarificator; he applied the cupping-glasses; he administered injections and inserted issues. He made very frequent use of external applications, such as ointments, plasters, liniments, etc., and was familiarly acquainted with the effects of external temperature. His materia medica was tolerably copious, and embraced many articles which still retain their place in our pharmacopœias. They were almost exclusively of vegetable origin, for the preparations which depend on chymical processes, such as metallic salts and oxides, the strong acids, with the spirituous compounds, were then totally unknown.

One important part of medical practice to which Hippocrates paid particular attention was the regulation of the diet; in this he displayed much sagacity and discernment, as well as on all points connected with the management of his patients, with regard both to the cure and prevention of disease. He appears to have been the first who noticed what has been called the epidemic constitution of the seasons, that inexplicable condition of the atmosphere, or of those influences to which the body is exposed, which appears to render it more or less obnoxious to certain morbid causes, and even to generate these causes at certain periods, without our being able to refer their production to any more general principle.

The tendency of the practice of Hippocrates to allow the operations of the system to pursue their course without interruption, united with his natural sagacity, enabled him to acquire great skill in prognostics, so that there are no parts of his writings which exhibit more

decisive marks of a superior understanding than those in which he treats on this topic. Upon a review of the character and writings of this celebrated individual, we conceive that we are warranted in the conclusion, that while there are few persons of any age or nation who attained to greater distinction among their contemporaries, or whose memory has been more cherished by posterity, there was perhaps no one whose fame was more merited or established upon a firmer foundation.*

CHAPTER III.

History of Medicine from the time of Hippocrates until its Introduction into Rome—Establishment of the Dogmatic Sect—Plato—Aristotle—School of Alexandria—Erasistratus Herophilus—Division of Medicine into different Departments—Into the Dogmatic and Empiric Sects—Their General Principles.

We have not much to add respecting the state of medicine during the period which immediately succeeded to the death of Hippocrates. The advance which he made in the science, and the improvement which he introduced into the practice, were so considerable, that no one appeared for some centuries who was able to proceed, at least in any considerable degree, beyond the point of perfection to which it had been brought by the great father of medicine. In conformity with the custom of the times, Hippocrates transmitted his profession to his sons Thessalus and Draco, and we are informed that it continued to descend in

* *Le Clerc*, par. i. liv. iii. *Courring*, cap. 2, §. 11, et alibi. *Schulz*, per. 1, §. 3, cap. 1-4. *Douglas*, *Bibliogr. Anat.* p. 1, et seq. *Barchusen*, diss. No. 12. *Haller*, *Bib. Med. lib. i.* §. 17-21. *Sprengel*, §. 3, chap. 3. *Enfield*, vol. 1, p. 442-4. *Aikin's Gen. Biog.* in loco. *Goulin*, *Enc. Méth.* "Médecine," in loco. *Cabanis*, ch. 2, §. 3. *Ackermann*, *Inst. Hist. Med.* p. 70-8. *Eloy*, *Dict.* in loco. *Nouv. Dict. Hist.* in loco. *Renauldin*, *Biog. Univ.* "Hippocrate."

the direct hereditary line for several successive generations. Polybus, his son-in-law, is singled out as having fully maintained the credit of his illustrious relative; and it is even said that many of the writings usually ascribed to Hippocrates are in reality the production of Polybus.†

The only other names which we meet with in the annals of medicine among the Asclepiadæ, that are in any considerable degree distinguished, are Diocles of Carystus and Praxagoras of Cos. The former of these obtained a high reputation for his learning and practical skill: he appears to have adopted for the most part the opinions and practice of Hippocrates.‡ Of the latter, although he is enumerated among the successful improvers of the art, we have only very imperfect and unsatisfactory accounts. We are indeed informed that he paid great attention to anatomy, that he particularly noticed the state of the pulse, and derived many of his indications from this source; but we have little except the general fact of the estimation in which his name was held by his contemporaries, which can enable us to form an estimate of his merit.* The name of Chrysippus may be noticed in this place as one who appears to have been a kind of irregular practitioner, as we should style him, who did not belong to the family of the Asclepiadæ, and was principally remarkable for the innovations which he introduced into practice.† But, like too many of those whose fame is principally founded on the novelty of their opinions, we do not find much to commend in them. We are told that he did not allow, in any case, of bleeding, and that he discountenanced the employment of all active purgatives; and, in short, that he

† *Le Clerc*, par. i. liv. iv. ch. 1.

‡ *Le Clerc*, par. i. liv. iv. ch. 5. *Schulz*, p. ii. cap. 1, §. 10-22. *Sprengel*, t. i. p. 366.

* *Le Clerc*, par. i. liv. iv. ch. 6. *Schulz*, p. ii. cap. 1, §. 23-8. *Sprengel*, t. i. p. 372-4.

† Pliny remarks of him, "Horum (referring to previous physicians) placita Chrysippus ingenti garrulitate mutavit." *Nat. Hist. lib. xxix. cap. 1.*

rejected many of the most powerful and effective agents in the treatment of disease.‡

Draco and Thessalus, in conjunction with their relative Polybus, are generally regarded as the founders of what has been considered as the first medical sect or school which was established upon rational principles. It obtained the name of the Hippocratean, or more generally the Dogmatic school or sect, because it professed to set out with certain theoretical principles which were derived from the generalization of facts and observations, and to make these principles the basis of practice.

Although we can have no hesitation in pronouncing this to be the correct and legitimate method of pursuing the study of medicine, yet it must be acknowledged at the same time that it is a method which, if not carefully watched and strictly guarded by prudence and sagacity, is exposed to the greatest danger of being corrupted by ignorance and presumption. Hence we may easily conceive that it would be liable to fall into the grossest errors, and to lie open to the most serious imputations, and that a fair plea would always be found for exclaiming against the introduction of what is termed theory into the practice of medicine. This abuse of the principles of the Dogmatists gave rise to the rival sect of the Empirics, who, perceiving the false reasoning of the former, and the injudicious practice consequent upon it, professed to be guided altogether by experience, and to discard all theory. For many centuries, these two sects divided the medical world; and even at this day, after all the revolutions of opinion and the improvements of science, we may observe very distinct traces of their influence. It was not, however, until a considerably later period that the Empirics formed themselves into a distinct sect, and became the declared opposers of the Dogmatists.§

‡ *Le Clerc*, par. ii. liv. i. ch. 1. *Schulz*, p. i. §. 3, ch. 5, 6. *Sprengel*, t. i. p. 365.
§ *Sprengel*, §. 4, ch. 1.

Besides the individuals who belonged to the family of the Asclepiadæ, and who made medicine their particular profession or pursuit, most of the philosophers of Greece bestowed a certain degree of attention upon this science; for it appears that among the ancients a knowledge of medicine was regarded as one of the branches of philosophy which was included in a course of general education. The only two, however, of the Grecian philosophers whom it will be necessary to mention on the present occasion are Plato and Aristotle, who, although they did not compose any treatises on medicine, strictly so called, make frequent allusions to it in various parts of their writings. The former of these authors, in his dialogue styled *Timæus* and in his treatise *De Republica*, has entered into various physiological discussions respecting the functions of the body, and the supposed effect of their derangement in producing the morbid conditions of the system, and has offered various incidental observations on the practice of his contemporaries. But it does not appear that either the theory or the practice of medicine received any improvement from this philosopher. He made little or no addition to the actual stock of our knowledge in any branch of natural science, while his peculiar genius rather led him to the formation of hypotheses and speculations derived from fanciful analogies, tinged with that air of mystery which pervades most of his writings.||

Both the original turn of mind and the pursuits of Aristotle were much better adapted to improve the science of medicine than those of Plato: he made very great advances in the knowledge of nature; he was peculiarly well situated for the acquisition of new information on all subjects connected with natural history, and he diligently availed himself of his advantages. He was the first writer who published any regular treatises on comparative anatomy and physiol-

|| *Le Clerc*, par. i. liv. iv. ch. 3. *Stanley's Hist. of Phil.* part v. ch. 22, p. 79 et alibi. *Sprengel*, t. i. p. 337 et seq.

ogy, and his works on these subjects may be still read with much interest after all the additions which have been made to them by the moderns.* But notwithstanding all these favourable circumstances, it may be questioned whether the influence of Aristotle has not been ultimately somewhat unfavorable to the progress of knowledge. With his valuable facts and observations he mixed up a large portion of recondite and refined speculations, so that it is frequently not easy to separate the one from the other; and so great was the ascendancy which this genius acquired over the minds of men for many centuries after his death, that all his opinions, the most unfounded as well as the most philosophical, were indiscriminately received as established truths, which no one ventured to oppose or to controvert.†

The next circumstance which we are called upon to notice in the history of medicine is the establishment of the school of Alexandria. This was effected by the munificence of the Ptolemies, who about three hundred years before the Christian era, laid the foundation of the celebrated Alexandrian library and of the school of philosophy which is graced by so many illustrious names. The science of medicine was cultivated in this school with peculiar assiduity, and we owe some very essential improvements to its professors. Among the most famous of these are Erasistratus and Herophilus. We have not much accurate information respecting the personal history of these two individuals, nor have any of their works been transmitted to us; but we have a detailed account of their opinions and practice given us by Galen, Cœlius Aurelianus, and others, so as to enable us to form a tolerably correct estimate of their merits. They are particularly mentioned as being the first who dissected the human subject, for which purpose the bodies of criminals were allotted to them by the government; and it appears that they amply pro-

* *Douglas*, *Bibliogr. Anat.* p. 9-11.

† *Le Clerc*, par. i. liv. ii. ch. 4. *Schulz*, p. ii. cap. i, §. 2 et seq. *Stanley*, part vi. passim. *Sprengel*, §. 4, cap. 2.

fited by the advantage which was thus given them, so as very considerably to advance our knowledge of the structure of the body, especially by pointing out those circumstances in which the human subject differed from that of the animals who most nearly resembled it, and in correcting the errors on this point into which their predecessors had fallen. Nearly every part of the great system of which the body is composed profited by their labours: they ascertained with much more correctness than had been previously done the structure of the heart and great vessels, and of the brain and nerves, and they even seem to have had some imperfect knowledge of the absorbents. We are informed that Erasistratus was the pupil of Chrysippus, and that he imbibed from him his prejudice against bleeding and against the use of active remedies, trusting more to the operation of diet or the natural efforts of the system: hence we are to regard him as having improved the practice of medicine only indirectly by the addition which he made to our knowledge of anatomy.‡ The anatomical fame of Herophilus is so intimately blended with that of Erasistratus that we are unable to assign to each his respective share of merit; but it would appear that the former was more correct and more skilful in the practical department. Of this we have one proof in the fact which is stated by Galen, that Herophilus was one of the first who paid very minute attention to the varieties of the pulse; and his name is handed down to us by the ancients as entitled to the highest respect, both from his character and his acquirements.§

An important circumstance in the history of medicine, and more especially in that department to which our attention is particularly directed, occurred soon after the establishment of the Alexandrian school, viz.

‡ *Le Clerc*, par. ii. liv. i. ch. 2-4. *Schulz*, p. ii. cap. 3, §. 35-66. *Sprengel*, t. i. p. 439 et seq. *Lauth*, p. 140, 1.
 § *Le Clerc*, par. ii. liv. i. ch. 6. *Schulz*, p. ii. cap. 3, §. 2-34. *Sprengel*, t. i. p. 433 et seq. *Lauth*, p. 139, 140.—For an account of the Alexandrian school generally, see *Sprengel*, sect. 4, ch. 3; and *Lauth*, liv. iv.

the division into distinct professions, which were exercised by different individuals. Previous to this period the practice of what is more especially styled medicine and of surgery was exercised by the same person; the *ιατρός* of the Greeks corresponding nearly to what we should now term the general practitioner. But about this time the separation into the departments of dietetics, pharmacy, and surgery commenced, and was gradually admitted into all succeeding schools or sects. The terms did not, however, possess precisely the same signification as in modern times. Dietetics comprehended not the regulation of the diet alone, but every circumstance connected with the general health or management of the patient, and correspond very nearly to the "medicus" or physician of modern times. The second included not merely the department of the apothecary or the compounder of drugs, but the performance of many of the operations of surgery; while to the third was allotted the treatment of surgical diseases, many of the operations, however, being committed to the professors of the second branch. That this separation eventually tended to the improvement of the respective branches of the profession will scarcely be doubted, although it must at the same time be acknowledged that many of the distinctions which were introduced were frivolous and invidious, and are now rapidly yielding to the superior intelligence of modern times.*

It was about this period, *i. e.* shortly after the establishment of the Alexandrian school, that the great schism, to which we have so often alluded, took place. It was occasioned by the formation of the rival sects of the Dogmatists and the Empirics. Neither of these terms, in the first instance, bore exactly the same meaning which they convey to a modern ear. The controversy really consisted in the question, how far we are to suffer theory to influence our practice. While

* *Celsus*, lib. i. pr. f. *Schulz*, p. ii. cap. 5. *Le Clerc*, par. i. liv. ii. ch. 9. *Eloy*, "Partage de la Médecine."

the Dogmatists, or, as they were sometimes styled, the Rationalists, asserted that before attempting to treat any disease we ought to make ourselves fully acquainted with the nature and functions of the part which is affected, or rather of the body generally, with the operation of medical agents upon it, and with the changes which it undergoes when under the operation of any morbid cause; the Empirics, on the contrary, contend that this knowledge is impossible to be obtained, and, if possible, is not necessary;—that the minute and internal changes of the system, and of its different parts, are beyond the reach of our most acute observation, that it is alone essential to watch the phenomena of disease, and to discover what remedies are best fitted to relieve the morbid symptoms;—that our sole guide must be experience; and that, if we step beyond this, either as derived from our own experience or observation, or that of others on whose testimony we can rely, we are always liable to fall into danger and often fatal errors. We may remark that this controversy, like so many others which have occupied the attention of mankind for a succession of ages, is partly verbal, and in so far as it is not verbal, that it is a question of degree. The boldest Dogmatist professes to build his theory upon facts, and the strictest Empiric cannot combine his facts without some aid from theory. The uniform experience of all the schools and sects from the days of Hippocrates to the present time, demonstrates that the undue extension of either of these systems is injurious, that they both originate from a partial view of the subject, and may generally be traced to some defect either in the acquired information or natural disposition of the practitioner. The controversy, however, forms so prominent a feature in the history of medicine, that it will be necessary to advert to it very frequently in the following pages; and we shall find that in estimating the value of the various opinions or modes of practice which will successfully pass under our review, it will in most cases be neces-

sary to inquire from which of these sects they emanated.†

Respecting the individuals to whom the origin of these sects should be referred, there is some degree of obscurity: the Dogmatists generally claim Hippocrates for their founder, and it is certain that he investigated with great care the functions of the animal body, the action of morbid causes upon it, and the operation of remedies, or, as we should style them, the general principles of pathology and therapeutics. But while in this respect he acted upon the principles of the Dogmatists, he was no less remarkable for the accuracy with which he observed the phenomena of disease, and the actual operation of remedies upon individual cases, or even upon particular symptoms; and it may be affirmed, that in most instances, when his preconceived hypothesis seemed to be in contradiction to the results of his experience, he wisely followed the latter. We may, however, easily imagine that his successors, not being possessed of his sagacity and industry, would prefer the easier method of indiscriminately adopting all his principles and speculations, to the more arduous task of correcting or extending them by their own observation, and that they would in this way bring all theoretical reasoning into disrepute. It is more probable that this feeling would be gradually induced in the minds of practitioners, than that it would be at once announced by any single individual; and as a matter of historical fact, the ancients themselves were divided in their opinion as to the person to whom they should ascribe the origin of the empirical sect. Pliny attributes it to Acron, a physician of Sicily,* who was contemporary, if not prior to Hippocrates; while Celsus states that Serapion of Alexandria, who was said to be a pupil of Herophilus, was the first who distinctly professed the opinion that theory is to be totally discarded in medicine, and that direct experience should be our

† For an elegant summary of the arguments employed in this controversy, the reader is referred to *Percival's Essays*, Nos. 1 and 2.

* *Lib. xxix. cap. 1.*

sole guide.† We have little correct information respecting either the history or the practice of Serapion; none of his writings have been transmitted to us, but from the scattered notices which we meet with concerning him, dispersed through the works of the ancients, it may be conjectured that he was a man of considerable acuteness and sagacity, and that he generally adopted the practice of Hippocrates and his school, although he discarded their theory.‡

All the medical men of the period at which we are now arrived, and for some centuries subsequent to it, were attached to one or other of these rival sects, and, it would appear, in nearly an equal proportion. Unfortunately, however, for the Empirics, it has happened that all their writings have perished, so that we are obliged to form our opinion of their merits principally from the representation of their antagonists. There is, indeed, one happy exception in the works of Celsus, who, in the commencement of his treatise, has given an account of the leading opinions of the two opposing sects, in so candid and judicious a manner as almost to supersede any more elaborate discussion. It has been thought by many that the view which Celsus gives of the controversy is too favourable to the Empirics; and we admit that we can scarcely read his account without being impressed with the opinion, that he advocates their side of the question. Yet the conclusion which he draws is perfectly candid, and is, indeed, not very remote from what the most enlightened practitioner would form at the present day;—that the perfect rule of practice is derived from a due combination of reason and experience; that without experience all preconceived theory would be vain and useless; and that by simple experience, without any attempt at generalization, we should frequently fall into gross errors, and be unable to profit even by the very experience which is so much extolled. And,

† In præf. sub initio.

‡ *Schulz*, per. ii. cap. iv. §. 8 et seq.

indeed, whatever may have been the professed plan of the supporters of the two sects, we shall always find that the practice of the most eminent of either party actually proceeded upon a judicious combination of the two systems; and we are now persuaded that it is upon such a combination that all further improvements of the science and practice of medicine must essentially depend. §

CHAPTER IV.

On the State of Medicine among the Romans from its first Introduction into Rome until the Time of Galen—Roman Superstitions—Archagathus—Cato—Asclepiades—Themison—Origin of the Methodic Sect—Thessalus—Soranus—C. Aurelianus—Doctrines of the Methodics—Pneumatics and Eclectics—Aretæus—Archigenes—Celsus, his Doctrines and Practice—Condition of Physicians in Rome—Pliny—Dioscorides.*

For some centuries the school of Alexandria produced a succession of learned men, not only in medicine but in the other sciences, and contributed to the advancement of knowledge, or at least prevented the decay into which it was in danger of falling after the decline of the Grecian literature. It was during this period that the foundation was laid of the future grandeur of the Roman empire; but from the attention of this people being almost exclusively directed to warlike affairs, and perhaps also from other causes, science of all kinds, and medicine among the rest, was for a long time almost totally neglected. Rome had extended her empire far beyond the limits of Italy, and

§ *Galen*, de Subfigurat. Empir. et alibi. *Celsus*, in præf. *Barchusen*, Diss. Nos. 10 & 13. *Le Clerc*, par. ii. liv. ii. *Schulz*, per. ii. cap. iv. *Sprengel*, §. 4. ch. 1, 4. *Ackermann*, p. iii. cap. 10-13.

* For a concise, and at the same time a comprehensive, view of this period of the history of medicine, the reader is referred to the fifth section of Blumenbach's Introduction. I may further remark that this work may be consulted with advantage, in connection with almost all the names that pass in succession under our review.

had subdued most of her rivals, before she condescended even to tolerate the pursuit of the arts and sciences. We are expressly told by Pliny, that for six hundred years she was without physicians. We cannot conceive it possible that during this long period no attempts were made to remove diseases; we can only understand by it that there were no individuals eminent for their knowledge or skill who were engaged in the profession, or perhaps that it was scarcely regarded as the object of distinct pursuit, or that individuals were not especially trained to the exercise of it. We have, indeed, abundant evidence of two circumstances; that in this, as in every other subject connected with the arts of life, the Romans servilely copied from the Greeks,† and that, as far as their medicine was concerned, wherever they deviated from them it was for the purpose of adopting various superstitious rites and ceremonies, indicating the most profound ignorance and the grossest superstition. Numerous instances of this kind are incidentally mentioned by Livy; and although he wrote in the refined age and splendid court of Augustus, they are introduced in the thread of his narrative as actual transactions, without any observation indicative of his disbelief of their efficacy.‡ One of these is the account which he gives us of the introduction of the worship of Æsculapius into Rome. In consequence of a fatal epidemic, the senate had recourse to the usual expedient of consulting the Sibylline books, where it was found to be enjoined upon them to transfer the worship of the god from Greece to their city. A formal deputation was accordingly despatched for the purpose, by whom the deity, unwilling to leave his native place, was seized by a

† *Suetonius*, de Grammat. sub initio; the fact is admitted by Cicero and by Pliny, and is frequently alluded to in various parts of their writings.

‡ The following references may be selected among many others of a similar kind:—Book i. ch. 31, Tullus consults the Sibylline books in order to stop the plague;—iv. 25, for the same purpose a temple is erected to Apollo;—v. 13, the books were again consulted;—vii. 2, a lectisternium was ordered for the same purpose, and afterward the public games;—vii. 3, the plague was stopped by the dictator driving a nail.

stratagem, and was conveyed under the form of a serpent into Italy. He was received by the people of Rome with unbounded transport; a temple was erected to him on an island in the Tiber; the usual appendages of priests, with all their ceremonies, were appointed; and the plague was of course suspended. §

Pliny further informs us that medicine was introduced into Rome at a later period than most of the other arts and sciences; that the practice of it had even been expressly prohibited by the citizens, and its professors banished. The account which he gives of so singular an occurrence is, that about two hundred years before Christ, Archagathus, a Peloponnesian, settled at Rome as a practitioner of medicine, and, as it may be inferred, was the first person who made it a distinct profession. He was received in the first instance with great respect, and was even maintained at the public expense; but his practice was observed to be so severe and unsuccessful, that he soon excited the dislike of the people at large, and produced a complete disgust to the profession generally, which led to the transaction mentioned above.* His practice seems to have been almost exclusively surgical, and to have consisted, in a great measure, in the use of the knife and of powerful caustic applications. We hear little more of the state of medicine in Rome for the next century; but from certain incidental observations we may infer that it remained principally in the hands of the priests, and consisted as before in superstitious rites and ceremonies. It appears, indeed, that the few individuals who devoted themselves to the cultivation of natural science, among other subjects directed their attention to medicine; and it is particularly stated that Cato introduced various articles into the *materia medica*, and wrote several treatises on medical topics. We are not able to form any just conception of their merit from

§ *Livius*, lib. x. cap. 47, et epitome ad lib. xi. *Val. Maximus*, lib. i. cap. 8. §. 2. *Schulz*, p. ii. cap. 6. §. 4 et seq. *Montfaucon*, *Antiq. Suppl.* v. i. b. v. ch. 1. *Lucianus*, *Tooke's Trans.* v. i. p. 635, note.

* *Lib. xxix. cap. 1.*

the account which is given of them; but it is worthy of remark that he was a professed opponent to Grecian literature in general, and we may therefore conclude, would not avail himself of the improvements that had been made by the Greek physicians.†

We may presume that the prejudice which was excited against Archagathus would be gradually allayed, and that the improvement of the Romans in intellectual cultivation, although not considerable, would be at least sufficient to make them sensible of the necessity of attempting something beyond the mere power of charms and incantations for the removal of disease. Accordingly, about a century before the Christian era, we find that another individual had acquired a very considerable degree of popularity at Rome, which he maintained through life, and in a certain degree transmitted to his successors,—Asclepiades of Bithynia. It is said that he first came to Rome as a teacher of rhetoric, and that it was in consequence of his not being successful in his profession that he turned his attention to the study of medicine. From what we learn of his history and of his practice, it would appear that he may be fairly characterized as a man of natural talents, acquainted with human nature, or rather with human weakness, and possessed of considerable shrewdness and address, but with little science or professional skill. He began upon the plan which is so generally found successful by those who are conscious of their own ignorance, of vilifying the principles and practice of his predecessors, and of asserting that he had discovered a more compendious and effective mode of treating diseases than had been before known to the world. As he was ignorant of anatomy and pathology, he decried the labours of those who sought to investigate the structure of the body, or to watch the phenomena of disease, and he is said to have directed his attacks more particularly against the writings of Hip-

† *Le Clerc*, par. ii. liv. iii. ch. i. *Schulz*, p. ii. cap. 6. *Ackermann*, p. iv. cap. 15.

pocrates. It appears, however, that he had the discretion to refrain from the use of very active and powerful remedies, and to trust principally to the efficacy of diet, exercise, bathing, and other circumstances of this nature. A part of the great popularity which he enjoyed depended upon his prescribing the liberal use of wine to his patients, and upon his attending in all cases, with great assiduity, not only to every thing which contributed to their comfort, but that he flattered their prejudices and indulged their inclinations. By the due application of these means, and from the state of the people among whom he practised, we may, without much difficulty, account for the great eminence to which he arrived, and we cannot fail to recognise in Asclepiades the prototype of more than one popular physician of modern times.

Justice, however, obliges us to admit that he seems to have been possessed of a considerable share of acuteness and discernment, which on some occasions he employed with advantage. It is said that to him we are indebted, in the first instance, for the arrangement of diseases into the two great classes of acute and chronic, a division which has a real foundation in nature, and which still forms an important feature in the most improved modern nosology. In his philosophical principles Asclepiades is said to have been a follower of Epicurus, and to have adopted his doctrine of atoms and pores, on which he attempted to build a new theory of disease, by supposing that all morbid action might be reduced into obstruction of the pores and irregular distribution of the atoms. This theory he accommodated to his division of diseases,—the acute being supposed to depend essentially upon a constriction of the pores, or an obstruction of them by a superfluity of atoms; the chronic, upon a relaxation of the pores or a deficiency of the atoms.*

* *Plinius*, passim. *Celsus*, ubi supra et alibi. *Le Clerc*, par. ii. liv. iii. ch. 4-9. *Sprengel*, sect. 5. ch. 1. *Cabanis*, ch. 2, §. 5. *Goulin*, Encyc. Méth., Médecine, "Asclépiade." *Chaussier et Adelon*, in *Biog. Univ.*, "Asclépiade."

Asclepiades was succeeded in his professional reputation by his pupil Themison of Laodicea, who had the honour of founding a new sect in medicine, which for some time almost eclipsed the former rivals; this was the Methodic sect. The great object of Themison seems to have been to adopt a middle course between the Dogmatists and the Empirics, and to take advantage of the excellences of each of them. He was, however, strongly impressed with the great principles of Asclepiades, the importance of reducing the science to a few general laws, which by their simplicity might be universally intelligible and of easy application. He therefore rejected all the abstruse and recondite speculations of the Dogmatists, and substituted in their place a few positions derived from the tenets of his master, and founded upon the Epicurean doctrines. He remarks that it is an essential part of the business of the practitioner to make himself acquainted with the nature of the human frame, with its laws while in the state of health, and with the changes which they experience from disease. All these he referred to the respective states of constriction and relaxation, and to the undue preponderance of one of them over the other. To these two, however, he added a third, or mixed state, as he styled it, the nature of which is not very easy to understand; while by classing all medical agents under the two great divisions of astringents and relaxants, we learn how to apply the appropriate remedy for every disease.

Themison's doctrine must be regarded as a refinement, and certainly an improvement of that of Asclepiades; for although we have the states of constriction and relaxation professedly copied from his master, it is disencumbered of the more objectionable speculation of the atoms and pores. The theory of the Methodics contemplates the solids as the seat and cause of disease, in which respect it is directly opposed to that of Hippocrates, who traced the primary cause of disease to an affection of the fluids, giving rise to what has been

termed the Humoral Pathology. The humoral pathology was zealously defended by Galen, and was universally adopted by his successors until the seventeenth century, when the opposite doctrine of Solidism was revived, and has been gaining ground until the present day. It has been justly objected to Themison's theory, that even if we admit the correctness of his views respecting the states of constriction and relaxation of the system, there is a palpable absurdity in supposing that they can be co-existent in what he terms his middle state, as they are directly opposed to each other.

There is no work of Themison's extant, but we have an ample account of his practice in the writings of Cælius Aurelianus, who was a zealous defender of the tenets of the Methodic sect. They appear to have been diligent in the observation of the phenomena of disease, and sagacious in their employment of remedies: they seem, indeed, to have sustained their character, of keeping a middle course between the Dogmatists and Empirics, avoiding the extremes of either, and combining the more useful parts of each system in a greater degree than had been done by their predecessors.†

For some time after the death of Themison the opinions of the Methodics were generally adopted in Rome, and almost superseded those of the professed Dogmatists and Empirics, so that we shall have little to detain us in our progress, except to notice certain individuals who became remarkable from their personal history or character, or from some peculiarity in their opinions or practice. The first of this description in point of time is Thessalus, who lived about half a century after Themison, and who ranks as one of his followers. He was, however, an individual very different, both in character and in acquirements, from his master. He is stated to have been of mean birth and of defective education, but, by cunning and artifice, to have acquired great wealth and a high reputation. He

† *Celsus*, in præf. *Le Clerc*, p. ii. liv. iv. sect. 1, ch. 1. *Barchusen*, Diss. 11. *Sprengel*, t. ii. p. 20-3. *Ackermann*, per iv. ch. 17.

began his career, in the usual mode of ignorance and self-sufficiency, by endeavouring to throw contempt on all his predecessors and contemporaries, by pretending to expose their errors, and by claiming to himself the discovery of a new theory of medicine which should lead to more correct practice, and should supersede all further attempts of the kind; in fine, he assumed to himself the pompous title of the conqueror of physicians (*ιατρονικης*).*

We shall not have occasion to dwell long upon one who is so unworthy of a place in the records of science; it is only necessary to remark concerning him, that he appears to have united the speculations of Asclepiades with those of Themison, and to have admitted the atoms and pores of the one, with the constriction and relaxation of the other. The only addition which Thesalus made to medical theory which deserves our notice, is the introduction of what he terms metasyncrasis, or the method of producing an entire change in the state of the body. This he opposed to the practice of Hippocrates, who professed to watch over and regulate the actions of the system, as well as to that of the Empirics, whose aim was to correct specific morbid actions, or to remove particular morbid symptoms. The term, as conveying a conceivable if not an actual occurrence, was not without its value, and was generally adopted by medical writers; and even in the present day the principle implied in it serves as the foundation for some of our most important indications.†

The name of Soranus next occurs among the celebrated Roman practitioners. There is, indeed, some reason for supposing that there were no less than three physicians of this name, but the one who is most eminent appears to have been a native of Ephesus, to have studied at Alexandria, and finally to have settled

* *Plinius*, lib. xxix. cap. 1.—We have an amusing, and probably a correct, account given us by Lucian, of the successful knavery practised by an impostor of his age, named Alexander; see Tooke's *Trans.*, v. i. p. 630 et seq. He appears to have been a worthy successor of Thesalus, so far as respects his arrogance and presumption.

† *Le Clerc*, p. ii. liv. iv. sect. 1, ch. 2, 3. *Sprengel*, t. ii. p. 28-31.

in Rome. He was a strict Methodic, and is said to have been highly respected for his character and talents. His writings have not been transmitted to us, but probably the most valuable information which they contain is handed down to us by C. Aurelianus, whose work, if not, as some have supposed, a translation of Soranus's treatise, proceeds upon the same principles, and inculcates the same practice.‡

There is considerable uncertainty respecting both the age and country of C. Aurelianus. Some writers place him as early as the first century of the Christian era, while others endeavor to prove that he was at least a century later. This opinion is principally founded upon the circumstance of his not mentioning or being mentioned by Galen, indicating that they were contemporaries or rivals. Numidia has been generally assigned as his native country, but perhaps without any direct evidence; it may, however, be concluded from the imperfection of his style, and the incorrectness of some of the terms which he employs, that he was not a native either of Greece or of Italy. But whatever doubts may attach to his personal history, and whatever defects exist in his writings, they afford us much valuable information respecting the state of medical science. He was a professed and zealous Methodic, and it is principally from his work that we are able to obtain a correct view of the principles and practice of this sect. In his descriptions of the phenomena of disease he displays considerable accuracy of observation and diagnostic sagacity; and he describes some diseases which are not to be met with in any other ancient author. He gives us a very ample and minute detail of the practice which was adopted both by himself and his contemporaries; and it must be acknowledged that on these points his remarks display a competent knowledge of his subject, united to a clear and comprehensive judgment.

He divides diseases into the two great classes of

‡ *Le Clerc*, par. ii. liv. sect. 1, ch. 4. *Sprengel*, t. ii. p. 33-5.

acute and chronic, nearly corresponding to diseases of constriction and of relaxation, and upon these supposed states he finds his primary indications; but with respect to the intimate nature of these states of the system, as well as of all hidden or recondite causes generally, he thinks it unnecessary to inquire, provided we can recognise their existence, and can discover the means of removing them. Hence his writings are less theoretical and more decidedly practical than those of any other author of antiquity; and they consequently contributed more to the advancement of the knowledge and actual treatment of disease than any that had preceded them. They contributed in an especial manner to perfect the knowledge of therapeutics, by ascertaining with precision the proper indications of cure, with the means best adapted for fulfilling them. The great defect of C. Aurelianus, a defect which was inherent in the sect to which he belonged, was that of placing too much dependence upon the twofold division of diseases, and not sufficiently attending to the minute shades by which they gradually run into each other; a defect the more remarkable in one who shows so much attention to the phenomena of disease, and who, for the most part, allows himself to be so little warped by preconceived hypothesis. This view of the subject leads him not unfrequently to reject active and decisive remedies, when he could not reconcile their operation to his supposed indications; so that, although his practice is seldom what can be styled bad, it is occasionally defective.

There were two points in which C. Aurelianus, and the Methodics generally, decidedly opposed the doctrines and practice of the followers of Hippocrates, in trusting the removal of disease to the restorative powers of nature, and in attributing diseases to the excess or defect of particular humours. With respect to the former point, they conceived that it was as frequently necessary to oppose as to promote the natural

actions of the system; and with respect to the latter, they did not admit the existence of the supposed four humours; and even, if their existence could be proved, they did not conceive that they were in possession of the means of acting upon them individually or specifically.

In the treatment of acute diseases, or those of constriction, the cure was effected by topical bleeding (for general bleeding was rarely admitted), and by narcotic and oleaginous applications, aided by a pure and sometimes by a moist air. Abstinence was strictly enjoined, and indeed often carried to an undue length; and in the administration of all remedies the practitioner was frequently guided by critical periods, generally of three, or in other cases of seven days. When the ordinary means of cure were found not to be successful, or when any circumstance occurred which appeared to contraindicate their application, C. Aurelianus had recourse to a preparatory system. This consisted principally in certain regulations regarding diet and exercise, in the use of the bath, frictions, and other external applications; when the system was thus prepared, the ordinary plan of treatment was had recourse to. Inflammatory diseases were supposed to depend upon constriction; abstinence, rest, and friction were enjoined in the first instance; bleeding, general or local, baths, and certain vegetable preparations were then administered, while purgatives seem to have been seldom if ever employed. Little regard appears to have been paid to particular symptoms, and upon the whole we should be disposed to consider the practice as deficient in promptness and vigour, and not very unlike that which prevails at this day in many parts of the Continent. We have mentioned above that C. Aurelianus seldom employed purgatives,—an unfortunate prejudice, by which he deprived himself of one of the most useful agents in the cure of disease; he also generally condemns the use of what are termed specifics,—an error, if it be one,

much more venial; he very sparingly employs diuretics, condemns narcotics, and rejects caustics and all similar applications.*

Although the Methodic sect continued to prevail among the Roman physicians during the greatest part of the first two centuries of the Christian era, some alteration in the original tenets of Themison were gradually introduced, and it at length became subdivided into several minor sects or schools, which although agreeing in certain fundamental principles, had each their peculiar views, which led to their separation from the main body, and to the adoption of specific appellations. Two of these were of sufficient notoriety to require being individually mentioned in this sketch,—the Pneumatics, and the Eclectics or Episynthetics.

The Pneumatics rose into notice about half a century after the death of Themison. They derive their appellation from the circumstance of their having introduced into their pathology the agency of what is termed the spirits (*πνευμα*), which, together with the solids and fluids, compose the corporeal frame. It would be somewhat difficult to state, in a few words, to what supposed substance or power the term was applied; we may observe in it some traces of the pneumatic physiology of the modern chymists, while in some of its agencies it resembles the nervous influence. This sect has acquired considerable celebrity from the name of an eminent medical writer, which has been generally attached to it, that of Aretæus.

There is some uncertainty respecting both the age and the country of Aretæus; but it seems probable that he practised in the reign of Vespasian, and he is usually styled the Cappadocian. He wrote a general treatise on diseases, which is still extant, and is certainly one of the most valuable reliques of antiquity, displaying great accuracy in the detail of symptoms, and in seiz-

* Vide Opus, de Morb. Acut et Chron. *Le Clerc*, par. ii. liv. iv. sect. 1, ch. 5-11; we have in this author a very ample account of the principles and practice of the Methodics. *Barchusen*, Diss. 11, §. 5. *Haller*, Bib. Med. §. 72. *Sprengel*, t. ii. p. 37 et seq. *Eloy*, in loco. *Biog. Univ.* in loco.

ing the diagnostic character of diseases. In his practice he follows, for the most part, the method of Hippocrates, but he paid less attention to what have been styled the natural actions of the system; and, contrary to the practice of the father of medicine, he did not hesitate to attempt to counteract them, when they appeared to him to be injurious. The account which he gives of his treatment of various diseases indicates a simple and sagacious system, and one of more energy than that of the professed Methodics. Thus he freely administered active purgatives; he did not object to narcotics; he was much less averse to bleeding; and upon the whole his *materia medica* was both ample and efficient. It may be asserted generally, that there are few of the ancient physicians, since the time of Hippocrates, who appear to have been less biased by attachment to any peculiar set of opinions, and whose account of the phenomena and treatment of disease has better stood the test of subsequent experience. We have placed Aretæus among the Pneumatics, because he maintained the doctrines which are peculiar to this sect, and because he is generally considered as such by most systematic writers, although perhaps, strictly speaking, he is better entitled to be placed with the Eclectics.*

Of the sect of the Eclectics we know little except through the medium of the writings of their opponents. The most celebrated of them was Archigenes of Appamea, who practised at Rome in the time of Trajan, and enjoyed a very high reputation for his professional skill. He is, however, reprobated as having been fond of introducing new and obscure terms into the science, and having attempted to give to medical writings a dialectic form, which produced rather the appearance than the reality of accuracy. Archigenes published a treatise on the pulse, on which Galen has written a commentary; it appears to have contained a

* *Le Clerc*, par. ii. liv. iv. sect. 1, ch. 2-3. *Barchusen*, Diss. 15, p. 232 et seq. *Haller*, Bib. Med. §. 64. *Eloy*, in loco. *Goulin*, Encyc. Méthod. Médecine, t. iii. p. 385 et seq. *Sprengel*, t. ii. p. 82-7. *Chaus sier et Adelon*, Biog. Univ. "Aretée."

number of minute and subtile distinctions, many of which we may venture to affirm have no real existence, and to have been, for the most part, the result rather of a preconceived hypothesis than of actual observation; and the same remark may be applied to an arrangement which he proposed of fevers. He, however, not only enjoyed a considerable degree of the public confidence during his lifetime, but left behind him a number of disciples, who for many years maintained a respectable rank in their profession.†

It may appear singular that we have so many instances of individuals who have risen to great eminence, both from their professional skill and general science, but of whose private history we possess so little information. This is very remarkably the case with Celsus. We know little of his age, his origin, or even of his actual profession. There are some incidental expressions which lead to the conjecture that he lived under the reigns of Augustus and Tiberius, and particularly the mode in which he refers to Themison would indicate that they were either contemporaries, or that Themison preceded him by a short period only. With respect to the country of Celsus we have nothing on which to ground our opinion, except the purity of his style, which at most would prove no more than that he had been educated, and passed a considerable part of his life at Rome.

With regard to his profession, it has been doubted whether he was a practitioner of medicine, or whether he only studied it as a branch of general science after the manner of some of the ancient Greek philosophers. This doubt has arisen principally from the mode in which he is referred to by Columella‡ and by Quintilian,§ and by his not being enumerated by Pliny among the physicians of Rome in his sketch of the

† *Le Clerc*, par. ii. liv. iv. sect. 2, ch. i. *Barchusen*, Diss. 15, p. 240 et seq. *Sprengel*, t. ii. p. 75-82.
 ‡ *De Re Rust.* lib. vi. cap. 5.
 § *Lib.* xii. cap. 11.

history of medicine. Yet, on the other hand, it appears to me that his work bears very strong evidence that he was an actual practitioner, that he was familiar with the phenomena of disease and the operation of remedies, and that he described and recommended what fell under his own observation, and was sanctioned by his own experience; so that I conceive it, upon the whole, most probable that he was a physician by profession, but who devoted part of his time and attention to the cultivation of literature and general science.

The treatise of Celsus "On Medicine" is divided into eight books. It commences by a judicious sketch of the history of medicine, terminating by the comparison of the two rival sects, the Dogmatists and the Empirics, which has been referred to above. The two next books are principally occupied by the consideration of diet, and the general principles of therapeutics and pathology: the remaining books are devoted to the consideration of particular diseases and their treatment, the third and fourth to internal diseases, the fifth and sixth to external diseases and to pharmaceutical preparations, and the two last to those diseases which more particularly belong to surgery. In the treatment of disease, he for the most part pursues the method of Asclepiades; he is not, however, servilely attached to him, and never hesitates to adopt any practice or opinion, however contrary to his, which he conceived to be sanctioned by direct experience. He adopted, to a certain extent, the Hippocratic method of observing and watching over the operations of nature, and rather regulating than opposing them, a method which, with respect to acute diseases, may frequently appear inert. But there are occasions on which he displays considerable decision and boldness, and particularly in the use of the lancet, which he employed with more freedom than any of his predecessors. His regulations for the employment of bloodletting and of purgatives are laid down with minuteness and precision; and although he

was, in some measure, led astray by his hypothesis of the crudity and concoction of the humours, the rules which he prescribed were not very different from those which were generally adopted in the commencement of the present century. His description of the symptoms of fever, and of the different varieties which it assumes, either from the nature of the epidemic, or from the circumstances under which it takes place, are correct and judicious; his practice was founded upon the principles so often referred to, of watching the operations of nature, conceiving that fever consists essentially in an effort of the constitution to throw off some morbid cause, and that, if not unduly interfered with, the process would terminate in a state of health. We here see the germ of the doctrine of the *vis medicatrix naturæ*, which has had so much influence over the practice of the most enlightened physicians of modern times, and which, although erroneous, has perhaps led to a less hazardous practice than the hypotheses which have been substituted in its room.

But perhaps the most curious and interesting parts of the work of Celsus are those which treat of surgery and surgical operations. It is very remarkable that he is almost the first writer who professedly treats on these topics, and yet his descriptions of the diseases and of their treatment prove that the art had attained to a very considerable degree of perfection. Many of what are termed the capital operations seem to have been well understood and frequently practised, and we may safely assert, that the state of surgery, at the time when Celsus wrote, was comparatively much more advanced than that of medicine. The pharmacy of Celsus forms another curious and interesting part of his work, and, like his surgery, marks a state of considerable improvement in this branch of the art. Many of his formulæ are well arranged and efficacious, and on the whole they may be said to be more correct, and even more scientific, than the multifarious compounds which were afterward introduced into practice, and

which were not completely discarded until our own times.*

There is one circumstance respecting Celsus which requires to be noticed, that he is the first native Roman physician whose name has been transmitted to us. Before his time all those who arrived at any degree of eminence were either Greeks or Asiatics, and it would appear that the native practitioners were either slaves or persons from the lower ranks of life, who acted in the subordinate branches of the profession.* This circumstance may be attributed partly to the low state of science in Rome, even during the period when literature had advanced to a considerable eminence, and still more to the idea of degradation or servility which seems to have been attached to the exercise of any art or profession for the sake of gain. All the trades and manufactures of Rome were therefore carried on by slaves, and medicine seems to have been placed in the same class. It must, however, be observed, that many individuals who were brought to Rome as slaves, either by their natural talents or by some favourable conjuncture of circumstance, overcame the disadvantages of their situation, and made considerable acquirements in different departments of knowledge, and among others in that of medicine. One of the most celebrated of these is Antonius Musa, who was appointed physician to Augustus, and obtained great celebrity from his practical skill: we are told that he was a pupil of Themison, and it appears that he remained attached to the Methodic sect.†

Before we close this part of our history, it will be necessary to take some notice of a class of writers,

* *Le Clerc*, par. 2. liv. iv. sect. 2, ch. 4, 5. *Barchusen*, diss. 15, p. 231, 2. *Morgagni*, *Epistolæ in Celsum*. *Haller*, *Bib. Med.* t. i. §. 49. *Eloy*, in loco. *Nouv. Dict. Hist.* in loco. *Sprengel*, t. ii. p. 25-8. *Black's Hist. of Medicine*, p. 63-82. *Goulin*, *Encyc. Méth. Médecine*, in loco. *Petit-Radel*, *Biog. Univ.* "Celse."

* *Le Clerc*, par. 3. liv. i. ch. 2. The condition of the practitioners of Medicine in Rome was the subject of a learned controversy between Mead and Middleton; see *Life of Mead*, prefixed to his works, v. i. p. 13, Edin. 1765, and *Aikin's Gen. Biog.* art. "Middleton."

† *Haller*, *Bib. Med.* t. i. p. 150, 1. *Eloy*, in loco. *Aikin's Gen. Biog.* in loco.

whose names or works are transmitted to us, who particularly devoted themselves to the improvement of pharmacy. The first of these was Scribonius Largus, who flourished in the reign of Claudius. He appears to have been, like Musa, originally a slave, and it may be conjectured from his work "On the Composition of Medicines," which has been transmitted to us, that he was never able to supply the deficiency of his education. It is a mere collection of nostrums and formulæ, without arrangement or discrimination, and is solely valuable as indicating the state of the art at the time of its publication.‡

Andromachus, a native of Crete, who lived under the reign of Nero, is principally known to posterity as the inventor of certain compounded pharmaceutical preparations, one of which, the theriaca, obtained so much celebrity as to have been retained in our pharmacopœia until the close of the last century. It was composed of no less than sixty-one ingredients, which were combined together with much ceremony and no inconsiderable degree of labour and skill. Its essential ingredient, from which it derived its name, was the dried flesh of vipers, against the bites of which animals it was supposed to be an antidote. But its supposed medical virtues were equal to the number of articles of which it consisted, so that there was scarcely a disease for which the theriaca of Andromachus has not been proposed as a remedy. Andromachus is further remarkable as being the first individual on whom the title of Archiater, or principal physician, was bestowed by the emperors—a title which was continued for several centuries.§

We have next to notice an author of just celebrity, whose writings form one of the most valuable remains of antiquity,—Pliny the naturalist. Although not attached to the medical profession, and even, as appears

‡ *Haller*, Bib. Bot. t. p. 76, 7. and Bib. Med. lib. i. §. 51, t. i. p. 166, 7. *Eloy*, in loco. *Sprengel*, t. ii. p. 55.
 § *Le Clerc*, par. 3, liv. ii. ch. 1. *Eloy*, in loco. *Haller*, Bib. Med. lib. i. §. 56, t. i. p. 178, 9.

from many of his remarks, by no means favourably disposed to it, in various parts of his great work he affords us much important information, both direct and indirect, respecting the history of medicine in all its branches, and more especially in all that concerns *materia medica* and pharmacy.|| We meet with a great number of curious facts and remarks upon these subjects, so that we are enabled from them to form a tolerably complete conception of the state of medical science in the age in which he wrote. We learn from his works that the ordinary practice was, in a considerable degree, what may be termed empirical, consisting in the application of certain remedies for certain diseases, without any inquiry into their mode of operation. The *materia medica*, which was extensive, consisted principally of vegetable products, and these combined together in various forms, but without any regard to what we should now regard as scientific principles, either chymical or pharmaceutical. We find that they possessed various active remedies, adapted to the greatest part of the most important indications, so far as they could be obtained from vegetable or animal substances, but that in the application of them they frequently proceeded upon incorrect principles.

Another writer who lived about the same time with Pliny, and who, although less distinguished for general science, holds a conspicuous rank among the medical authors of this period, is Dioscorides. The same obscurity hangs over every thing which regards the personal history of Dioscorides, as over that of so many individuals to whom we have had occasion to refer. It is generally supposed that he was a native of Asia Minor, and that he was a physician by profession. It appears pretty evident that he lived in the second century of the Christian era, and as he is not mentioned

|| The late illustrious naturalist Cuvier has formed what I conceive to be a very just and candid estimate of the literary and philosophical character of Pliny, *Biog. Univ.* t. xxxv. in loco; the same inserted into the translation of Pliny by M. Aj. de Grandsagne, t. i. p. 85. See *Eloy*, in loco, for a list of the various editions, &c. of Pliny; he enumerates one hundred and ten, of which it is worthy of notice that two only were printed in England. *Haller*, *Bib. Bot.* t. i. p. 91-8.

by Pliny, it has been supposed that he was a little posterior to him. The exact age of Dioscorides has, however, been a question of much critical discussion, and we have nothing but conjecture which can lead us to decide upon it. He has left behind him a treatise on the *materia medica*, a work of great labour and research, and which, for many ages, was received as a standard production. The greater correctness of modern science, and the new discoveries which have been made, cause it now to be regarded rather as a work of curiosity than of absolute utility; but in drawing up a history of the state and progress of medicine, it affords a most valuable document for our information. His treatise consists of a description of all the articles then used in medicine, with an account of their supposed virtues. The descriptions are brief, and not unfrequently so little characterized, as not to enable us to ascertain with any degree of accuracy to what they refer, while to the practical part of his work the same remark nearly applies, that was made above with respect to Pliny, that it is, in a great measure, empirical, although his general principles, as far as they can be detected, appear to be those of the Dogmatic sect. The great importance which was, for so long a period, attached to the works of Dioscorides has rendered them the subject of almost innumerable commentaries and criticisms, and even some of the most learned of our modern naturalists have not thought it an unworthy task to attempt the illustration of his *Materia Medica*. Upon the whole, we must attribute to him the merit of great industry and patient research, and it seems but just to ascribe a large portion of the errors and inaccuracies into which he has fallen, more to the imperfect state of science when he wrote than to any defect in the character and talents of the writer.*

* *Le Clerc*, par. iii. liv. ii. ch. 2. *Eloy*, in loco, where we have an account of the various editions, comments, translations, &c. *Sprengel*, t. ii. p. 58-64. *Ackermann*, p. 4. cap. 19. *Haller*, Bib. Bot. t. i. p. 79-87. *Goulin*, Encyc. Méth. Médecine, "Dioscoride." *Du-Petit-Thouars*, Biog. Univ. in loco.

CHAPTER V.

Account of the opinions and practice of Galen—His history and education—Remarks on his character and writings—His physiology, anatomy, pathology, and practice.

The course of our narrative brings us to one of those extraordinary characters who are destined to form an era in the history of science, both from the actual improvements which they have introduced into it, and from the ascendancy which their genius enabled them to acquire over the minds of their contemporaries. Of these, one of the most remarkable that ever appeared, either in ancient or in modern times, is Galen. Galen enjoyed, both from birth and from education, every natural and acquired advantage; his father was a man of rank, and his education appears to have been conducted upon the most liberal and judicious plan. He studied philosophy in the various schools that were then in the highest estimation, and without exclusively attaching himself to any one of them, he is said to have taken from each what he conceived to be the most important parts of their systems, with the exception of the Epicurean, the tenets of which he entirely rejected. His professional studies were conducted upon an equally extensive plan; he attended the various schools and travelled through different countries for the express purpose of acquiring information; but it may be presumed that his knowledge of medicine was principally acquired in Alexandria, which still retained its character as the great depository of medical science. After passing a few years at his native city of Pergamus, spending some time at Rome, and again at Pergamus, he finally returned to Rome, in consequence of the express request of the Emperor Aurelius, and made that city his residence for the remainder of his life.

The works which Galen left behind him are very

numerous, amounting in the whole to about two hundred distinct treatises; they are all on subjects directly or indirectly connected with medicine, and exhibit a great extent of knowledge on the subjects of which he treats, and a degree of information, as far as we can judge, greater than that of any of his contemporaries. He appears also to have been a man of a superior mind and of a very decided character; confident in his own powers, and paying but little attention to the opinions of others. Hence he may be accused of arrogance and want of candour, and he can only be defended upon the principle that he was so far in advance of his contemporaries, as to be fully convinced of the futility of their reasoning and the deficiency of their information. The result was, that he gained that superiority over his contemporaries which he assumed, and actually acquired a sway over public opinion, on all points connected with medicine, which has never been obtained by any individual either before or since his time. The rank which Galen held in the medical world has been compared not unaptly to that which Aristotle possessed in the world of general science. For centuries after his death his doctrines and tenets were regarded almost in the light of oracles, which few persons had the courage to oppose; and all the improvements in medicine which were even contemplated, consisted of little more than illustrations of his doctrines or commentaries on his writings. In numberless instances it was deemed a sufficient argument, not merely against an hypothesis, but even against an alleged matter of fact, that it was contrary to the opinion of Galen; and it may be stated without exaggeration, that the authority of Galen alone was estimated at a much higher rate than that of all the medical writers combined, who flourished during a period of more than twelve centuries.

Although such a brilliant reputation might, in some measure, depend upon accidental circumstances, and upon the mere personal character of the individual, we

may fairly presume that there must have been a foundation of a more solid nature: and upon an actual survey of the writings of Galen, we shall find ample reason to conclude that he was a man of great talents and of very extensive acquirements. In his general principles he may be considered as belonging to the Dogmatic sect, for his method was to reduce all his knowledge, as acquired by the observation of facts, to general theoretical principles. These principles he indeed professed to deduce from experience and observation, and we have abundant proofs of his diligence in collecting experience, and his accuracy in making observations. But still, in a certain sense at least, he regards individual facts and the detail of experience as of little value, unconnected with the principles which he laid down as the basis of all medical reasoning. In this fundamental point, therefore, the method pursued by Galen appears to have been directly the reverse of that which we now consider the correct method of scientific investigation; and yet, such is the force of natural genius, that, in most instances, he attained the ultimate object in view, although by an indirect path. He was an admirer of Hippocrates, and always speaks of him with the most profound respect, professing to act upon his principles, and to do little more than to expound his doctrines, and support them by new facts and observations. Yet in reality we have few writers whose works, both as to substance and manner, are more different from each other than those of Hippocrates and Galen, the simplicity of the former being strongly contrasted with the abstruseness and refinement of the latter. Those of his works which are the most truly valuable, and in which he actually rendered the greatest service to science are his treatises on physiology. The knowledge which he possessed on this subject was much more considerable than that of any of his contemporaries: in all that regards the operations of the animal economy he was much better acquainted with the facts, and much more ingenious in the application of

them. He appears to have been well practised in anatomy, and especially in what may be termed pathological anatomy he far surpassed any of the ancients. His knowledge of particular structures was, in many respects, correct, and in his mode of classifying them he made no inconsiderable approach to the philosophical views which have been taken of them by the anatomists of the present day. It appears upon the whole probable that he was not in the habit of dissecting the human subject, and, indeed, this may be fairly inferred from his own remarks; but there is reason to suppose that he omitted no opportunity of examining the structure of those animals which the most nearly resemble it, and that from them he has drawn up his descriptions. Considering this radical defect, it must be admitted that they possess great merit, and we may justly express our surprise at the few points in which they betray the imperfection of their origin.*

The pathology of Galen was much more imperfect than his physiology, for in this department he was left to follow the bent of his speculative genius almost without control. He adopts, as the foundation of his theory, the doctrine of the four elements, and like Hippocrates, he supposes that the fluids are the primary seat of disease. But in his application of this doctrine he introduced so many minute subdivisions and so much refined speculation, that he may be almost regarded as the inventor of the theory of the Humoralists, which was so generally adopted in the schools of medicine, and which, for so long a period, entirely engrossed their attention. The four elements, the four humours, and the four qualities, connected in all the variety of combinations, presented a specious appearance of method and arrangement, which took such firm possession of the mind as to preclude all inquiry into the validity of the foundation, and to present us with one of the most remarkable examples of the complete prostration of the understanding in a physical science, where facts

* *Douglas, Bibliog.* p. 18-22.

were daily obtruding themselves upon our observation, but were either unnoticed or totally disregarded.

The practice of Galen in its general character appears to have been similar to his pathology, and, indeed, to have been strictly deduced from it. His indications were in exact conformity to his theory, and the operation of medicines was reduced to their power of correcting the morbid states of the fluids, as depending upon their four primary qualities or the various modifications of them. Many parts of his writings prove that he was a diligent observer of the phenomena of disease, and he possessed an acuteness of mind which well adapted him for seizing the most prominent features of a case, and tracing out the origin of the morbid affection. But his predilection for theory too frequently warped and biased his judgment, so that he appears more anxious to reconcile his practice to his hypothesis than to his facts, and bestows much more labour on subtle and refined reasoning, than on the investigation of morbid actions, or the generalization of his actual experience.

The number of treatises which Galen left behind him is very considerable, amounting to nearly two hundred separate works, embracing every department of medical science. His style is generally elegant, but diffuse, and, as may be imagined from the multiplicity of his works, he frequently repeats and copies from himself. Considered under the two classes of anatomy and physiology, and of pathology and practice, the following may, perhaps, be selected as the most valuable, both with respect to the absolute addition which they made to the previous stock of knowledge, and as to the reasoning employed in them. Under the first head we may select the treatise "On the Use of the Parts of the Body," in seventeen books, in which he describes the structure of the different organs, and assigns to each of them its use. This is a work of great anatomical research and physiological ingenuity, which contains many facts that were probably the result of his own

investigation, and exhibits a very favourable specimen of his reasoning powers, when not too much under the influence of preconceived hypothesis. The same kind of merit, although less in degree, may be assigned to the treatise "On the Motion of the Muscles," and also to that "On the Formation of the Fœtus," making due allowance for the greater difficulty and obscurity of the subject.

Among the works of the second class the treatise "On Temperaments" has been greatly and justly celebrated, as well as that "On the Seat of Disease," while that "On the Variety of the Pulse" affords a happy illustration of his peculiar turn of mind, of his acuteness and originality, and, at the same time, of his devoted attachment to hypothesis. The two works, "On the Differences and the Causes of Diseases," and "The Method of Cure," are more especially interesting, as containing the most detailed view of his peculiar doctrines of the humoral pathology, of the indications of which he laid down, and the methods which he adopted for their accomplishment. These two latter works exhibit a very complete view of the practice of Galen and of that of his contemporaries, and enable us to form a correct opinion of the state of the science when he entered upon the study of it, and of the additions which he made to it. To attempt an analysis of the works themselves, or of the details of Galen's practice, would carry me far beyond the limits of this treatise, and indeed, it would be principally as a question of literary curiosity that such an examination could be sustained. Their general character may be understood from what has been stated above, and I fully coincide in the remark of a learned and impartial critic, the late Dr. Aikin, who, after giving full credit to Galen for talent and acquirements, thus concludes:—"His own mass and modern improvements have now in great measure consigned his writings to neglect, but his fame can only perish with the science itself." The remark which was formerly made with respect to Hippocrates applies

equally to Galen, that the great superiority which he acquired over his contemporaries appeared to repress all attempts at further improvement.*

CHAPTER VI.

An account of the successors of Galen—Decline of medical science—Sextus Empiricus—Oribasius—Aëtius—Alexander Trallianus—Paulus Eginetus—Account of the state of Medicine among the Arabians—Conquest of the Arabians—Their patronage of science—Invention of Chymistry—Ahrun — Serapion — Alkhendi—Rhazes—Ali-Abbas—Avicenna—Mesue—Albucasis—Avenzoar—Averroes—Estimate of the merits of the Arabic school.

In investigating the state of medicine during the middle ages, it is apparent that mankind seemed to be satisfied with the progress which had been made in the science, or were conscious of their inability to surpass the limits which had been assigned to it; and the result was, that for some time after the death of Galen we have few illustrious names to celebrate, and no discoveries to record. Literature in general was now, indeed, rapidly declining, and various causes, both moral and political, were coming into operation, which suspended the progress of science and learning for many centuries, and produced what are justly and emphatically denominated the dark ages. Into these causes it is not our business to inquire; it may be sufficient to remark that they were of so universal a nature as to operate on the human mind generally, and therefore to affect every intellectual pursuit. Medicine

* *Conring*, Introd. cap. 3. §. 16; cap. 4. §. 17, et alibi. *Le Clerc*, par. iii. liv. iii. ch. 1-8, contains a very ample account of all that regards the writings and opinions of Galen. At this period we lose the further aid of this candid and judicious historian of medicine. *Barchusen*, diss. no. 16. *Nouv. Dict. Hist.* "Galien." *Haller*, *Bib. Med.* lib. i. §. 80, 1. *Lauth*, liv. v. par. 1. *Sprengel*, sect. 5, ch. 6. *Ackermann*, cap. 21. 2. *Blumenbach*, Introd. sect. 75. *Goulin*, *Encyc. Méth. Médecine*, "Galien." *Renauldin*, *Biog. Univ.* "Galien."

among others, felt their paralyzing influence, although, from certain incidental circumstances to be hereafter noticed, it was not allowed to remain so completely stationary as most of the other branches of science.

About the period when Galen flourished, the Roman empire began to exhibit very decided symptoms of that decline, which, proceeding with more or less rapidity, was never altogether suspended, until it terminated in complete destruction. Even in the most splendid state of Rome, the cultivation of science was very limited, and we have had occasion to remark that almost all the physicians who acquired any considerable degree of celebrity were natives of Greece or Asia, and wrote in the Greek language. This was the case with Galen himself and with the few individuals who succeeded him, whose names are of sufficient importance to be introduced into this sketch. The medical writers of the third and fourth centuries have been characterized by Sprengel as "frigid compilers, or blind empirics, or feeble imitators of the physician of Pergamus."†

The only exception to this remark is Sextus Æm-
piricus, who appears to have been a contemporary of Galen, and probably derived his appellation from the sect to which he attached himself, as there are some treatises of his still extant, in which he attacks the principles of the Dogmatists with considerable acuteness. We may conclude from his works that he was a man of learning and talents, well versed in the principles of the philosophers, and familiar with all the branches of literature and science which were cultivated in his time.* He is, however, the last medical writer to whom the character of Sprengel does not strictly apply. Oribasius, who lived in the fourth century, Aëtius in the fifth, Alexander Trallianus in the sixth, and his contemporary Paulus of Ægina, were all zealous Galenists, who professed to do little more than to illustrate or comment on the works of

† T. ii. p. 170.

* *Enfield*, v. ii. p. 136.

their great master. Their writings are principally compilations from their predecessors; they are, however, occasionally-curious from the incidental facts which they contain, and by furnishing us with extracts or abstracts of treatises which are no longer extant; but this constitutes almost their sole value. The only additions to the practice of medicine which they afford are an account of certain surgical operations, which is given us by Aëtius, and a treatise by Paulus on midwifery, which is more complete than any that had previously appeared, and was long held in high estimation. But even these, which form but a small portion of the whole of their works, are connected with so much credulity and superstition, as to indicate at least the most degraded state of the science, if not the defective judgment of the writer. Aëtius expressly recommended the use of magical arts and incantations, and that, not, as has sometimes been done in a more enlightened age, from a knowledge of the effect they might produce on the imagination of the patient, but apparently from his own opinion of their physical operation.† It must, however, be admitted that both in Alexander Trallianus and in Paulus we meet with various descriptions of disease, which indicate that they possessed the talent of accurate observation; and we may conclude that, although in what respects opinions they were the devoted followers of Galen, yet in the simple detail of facts their authority may be relied upon with considerable confidence.‡

With the death of Paulus, which took place about the middle of the seventh century, we may date the termination of the Greek school of medicine, for after his time we have no work written in this language which is possessed of any degree of merit. Those which occasionally appeared were mere servile transcripts of Galen and his disciples, or compilations

† *Conring*, cap. 3, sect. 18-20. *Sprengel*, sect. 6, ch. 1-3.

‡ *Freind*, *Hist. Med.* p. 398 et seq. and p. 420 et seq. *Eloy*, "Paul d'Égine." *Haller*, *Bib. Med.* t. i. p. 311-15.

formed without judgment or discernment, devoid of original observation, or even of any attempt at generalization or arrangement. In this degraded state was the science of medicine reduced in the former seats of learning, when a new school arose in a different quarter of the world, which will require our attention, from the actual additions which it made to our knowledge, as well as from the mode of its origin and the nature of its connection with the Grecian and Roman schools.

The city of Alexandria still retained its reputation as the great school of medicine, partly resting its fame on the excellence of its former professors, and in some measure depending on the value of its extensive library and other institutions favourable to the cultivation of science, the forms of which at least were still preserved. But even these feeble remains were destroyed by the conquest of the Arabians in the seventh century, who, in the genuine spirit of blind bigotry, appeared to be actuated by the barbarous desire of totally eradicating science from the face of the earth. The catastrophe which befell the Alexandrian library is too well known to be repeated in this place,§ a calamity, the full extent of which can scarcely be appreciated by one who is in the habit of regarding literature only as it exists in modern times, when books of all descriptions are multiplied to an excessive degree, and when the loss occasioned by the most splendid collection would be nearly confined to a single nation or community. It appears, however, that notwithstanding the brutal violence of the Saracen invaders, some books escaped from the general wreck of literature and science, and that there were not wanting some individuals who were capable of estimating their value. Among these relics were the writings of Galen, and we are informed that at an early period of the Sara-

§ I have adopted the generally received account of this transaction: but the learned reader need not be informed, that a considerable, and perhaps not an unreasonable degree of doubt attaches to it. *Gibbon*, c. 51. v. 9. p. 392-5.

cent empire they began to be held in very high estimation; they were translated into the Arabic language, were commented upon and elucidated in various ways, and soon acquired a degree of celebrity scarcely short of what they had previously enjoyed among the Greeks themselves. The Arabians were also in possession of the works of Hippocrates, but the simplicity of this author was less adapted to their taste than were the metaphysical refinements and elaborate arrangements of Galen, so that, while the latter was regarded with a respect amounting almost to veneration, the former was little read or estimated.

After the immediate successors of Mahomet had completed their conquest of a considerable part of the civilized world, they rested from their warlike triumphs, and seemed disposed to add to the splendour of their empire by the cultivation of the arts of peace. The patronage of literature was an express object of many of their rulers, and even the works of the Greek philosophers were translated and studied with much assiduity.* But the spirit of Mohammedanism was decidedly averse to intellectual improvement, and we accordingly find that no additions were made to general science, and that very little was accomplished even in the collection of facts and observations. To this remark, however, medicine forms an exception; for although the Arabian physicians adopted implicitly all the theories and speculations of Galen, and seldom ventured in the smallest degree to deviate from his practice, we are indebted to them for the description of some diseases which either made their first appearance about this time, or had not been before specifically noticed.†

I must mention in this place a remarkable occurrence in the history of science, and one which indirectly

* The Arabians are said to have commenced the study of literature and science in the 108th year of the Hegirah, under the Caliph Al-mamoun; *Ockley's Hist. of the Saracens*, pref. p. xi.

† For an account of the Arabian school of medicine generally, the reader is referred to *Freind*, who treats upon everything connected with it in the most ample manner. See also *Barchusen*, diss. 17. §. 12 et seq. *Sprengel*, sect. 6. ch. 5. *Cabanis*, §. 6.

produced a very important effect upon the subject of this dissertation,—the invention of chymistry. The origin of chymistry, like that of all other sciences, is obscure and uncertain. Traces of what may be called chymical operations are to be found even among the Jews and Egyptians, but it is generally admitted that they are to be regarded as incidental occurrences, depending upon accidental observations, pursued no further than the object immediately in view, and not considered, even by those who practised them, as more than mere insulated facts, leading to no general principles nor to any further investigations. The practice of chymistry as a distinct pursuit seems to have originated with the Arabians, and by them was made subservient to the purposes of medicine.‡ It is not my business to inquire into the mode in which this art took its first rise, or to trace its subsequent progress, except so far as may be connected with my present subject; and this will be the most conveniently accomplished by giving in succession a brief account of the most distinguished writers who belonged to the Arabian school of medicine.

The earliest Arabian writer on medicine, of whom we have any certain account, would appear to be Ah-run, who was a priest at Alexandria. He published a treatise entitled “Pandects;” it has not come down to us, but it deserves to be noticed, as it is said to have contained the first description of the small-pox. He was contemporary with Paulus, and from the account of his works which has been transmitted to us by Rhazes, we may conclude that the science of medicine was cultivated at that time with at least as much success among the Arabians as among the Greeks. During the next three centuries, although we meet with the names of many individuals who acquired a certain degree of temporary celebrity, we have none who rendered themselves so far pre-eminent as to entitle them to particular notice in this brief sketch. The

‡ *Freind*, Hist. Med. pars 2. sub init. *Sprengel*, t. ii. p. 246-266.

first author of whom it will be necessary to give any distinct account is Serapion: he lived in the ninth century, and is said to have been a native of Damascus. His treatise, entitled, according to the fancy of the translators, "Aggregator," "Breviarium," or "Therapeutica Methodus," was written originally in Syriac; its professed object was to give a complete system of the Greek medicine, and to incorporate with it the principles and practice of the Arabians. Like those of the rest of his countrymen, the greatest part of Serapion's work is taken from those of his predecessors, and particularly from Galen; but it contains some few novelties with respect both to doctrine and to practice, and in one point, the preparation and composition of medicines, as well as in the articles employed, we may notice a decided improvement.*

At the same time with Serapion lived Alkhenidi, a multifarious writer, who obtained a very high degree of celebrity among his contemporaries, perhaps more from the variety of his acquirements than from the excellence he attained in any particular department. He is said to have assiduously cultivated mathematics, and the various branches of natural philosophy, as well as medicine; and among other subjects to which he particularly directed his attention, we find astrology expressly enumerated. In relation to his varied attainments, he was styled the subtle philosopher, the learned physician, and the Greek astrologer. As an example, both of the spirit of the age and of the genius of the individual, we may remark that Alkhenidi applied the rules of geometrical proportion and of musical harmony to regulate the doses of medicines, and to explain the mode of their operation—a mistaken application of science, which, however gross it may now appear, we must reflect was not entirely exploded until long after the revival of letters.†

* *Haller*, Bib. Bot. t. i. p. 183-9. For an account of the earlier writers of the Arabian school, see *Freind*, pars. 2. sub init.

† See particularly a paper by Balguy, on the mode of ascertaining the doses of vomiting and purging medicines, in *Edin. Med. Ess.* v. iv. p. 33, published in 1737, under the superintendance of some of the first men of science in the university.

We now come to one of the most illustrious of the Arabian school, Rhazes. He was born at Irak in Persia in the ninth century; he is described as a person of various acquirements, as being well versed in general science, and, as his writings demonstrate, of unwearied industry. There is some reason to doubt whether the principal work which has been transmitted to us under his name, entitled "Continens," is precisely in the form in which it was left by its author; but there appears to be sufficient proof of its general authenticity to enable us to deduce from it, as well as from his other acknowledged works, an ample and correct view of the opinions and practice both of Rhazes himself and of his contemporaries. For the most part, the writings of Rhazes are deficient in method and arrangement, and they consist principally of abstracts and comments on Galen and the Greek physicians; but they also contain observations that appear to be original, and we even meet with the description of some diseases which were either new, or, at least, were not noticed by the ancients. Rhazes gives us a correct and elaborate description of the small-pox and measles, detailing the theory which was formed of their nature and origin by the Arabians, and the treatment which they employed. The most curious and original work of Rhazes is his "Aphorisms," in one part of which he professedly gives the result of his own observation and experience. But even this treatise, which was long regarded as of the highest authority in the schools of medicine, contains little that is really new and valuable; and when we compare it with its celebrated prototype, we cannot but be impressed with the very small advance which had been made in the science and practice of medicine during a space of nearly thirteen centuries. The most important additions which Rhazes made were, perhaps, rather in surgery and in pharmacy than in medicine, strictly so called; and it is worthy of notice that, in the latter department, we have some of the earliest indications of

the free employment of what were styled chymical remedies.‡

A short time after Rhazes lived Ali-Abbas, a writer of considerable celebrity, who obtained the appellation of the magician. His principal work, entitled "Opus Regium," professes to contain a complete view of the state of medicine in all its branches; it consists chiefly of abstracts of the doctrines and opinions of the Greek physicians, but along with these are contained some original observations. At the time of its publication it was very highly estimated, and perhaps may be considered as possessing more real value than most of the works that proceeded from the Arabian school.§

The fame of Ali-Abbas was, however, almost entirely eclipsed by that of Avicenna,|| who flourished about a century later, and who rose to the highest pitch of celebrity, so as to be regarded by his countrymen as superior to Rhazes, or even to Galen himself. Avicenna was born at Bochara, in the year 980, and was carefully educated in all the learnings of the times, consisting principally of the Aristotelian logic and dialectics, with the imperfect mathematical and physical science, that was then taught in the schools of Bagdat. He appears to have been possessed of an ardent desire for acquiring knowledge, and of great industry, but united to a portion of fanaticism, indicative of a defective judgment, and fostered by the spirit of the age, which induced him to conceive himself under the influence of supernatural revelation. After a foundation of general science, he entered upon the study of medicine, which he prosecuted with the same diligence, and with the same spirit of enthusiasm. His reputation became so high, that he was early introduced to the court, and for some years was without

‡ *Freind*, p. 483-91. *Haller*, *Bib. Med. Prac.*, lib. ii. §. 135. *Eloy*, in loco. *Lauth*, p. 280-2. *Sprengel*, t. ii. p. 285-301.

§ *Freind*, p. 481. *Haller*, *Bib. Med.* lib. ii. §. 137. t. i. p. 380. *Sprengel*, t. ii. p. 301-5.

|| The actual name of this individual is said to have been Al-Hussain-Abou-Ali-Ben-Abdallah-Ebn-Sina. *Sprengel*, t. ii. p. 305. In most cases it appears that the names by which the Arabians are generally known in Europe were not their real names.

a rival in his profession. His death, which took place in the fifty-sixth year, was probably hastened by some political intrigues, in which he unfortunately became entangled.

The works which Avicenna left behind him are numerous, and embrace both general science and medicine. The former long maintained a high character for extent of information and profundity of learning, and, according to the standard of the age, were probably entitled to this commendation. But his fame, both with his contemporaries and with posterity, principally rests upon his great medical work, entitled "Canon Medicinæ," which may be regarded as a kind of encyclopedia of all that was then known of medicine, and of the sciences connected with it, anatomy, surgery, therapeutics, and botany. Its celebrity was so great as to have acquired for its author the title of prince of physicians; for some centuries it was the received text-book in most of the medical schools, both of the Arabians and the Europeans; until the revival of letters it superseded, in a great measure, the works even of Galen; it produced scarcely less numerous commentaries and epitomes, and had not entirely lost its authority two centuries ago. Yet the matured judgment of one of the most learned and candid of the modern critics has not hesitated to bestow upon this so-much-vaunted production the character of an ill-digested and servile compilation, containing little that is new, either in the way of observation or of practice. Indeed, the sole aim of Avicenna seems to have been to collect matter from all quarters, without paying any regard to its value, or to the mode in which it was arranged. He was a devoted admirer of Aristotle and Galen, and seemed to imagine that the ultimate object, either of the philosopher or the physician, consisted in being intimately acquainted with their writings, and in defending them against all objections. Upon the whole, after making every allowance for the period in which he lived, it seems difficult to account for the very great

credit which he acquired, not only during his lifetime, but which was attached to his writings after his death; a credit so much greater than what they merit, either from the importance of the information which they contain, or the mode in which it is conveyed.*

There are two Arabian writers of the name of Mesue, whose celebrity entitles them to a brief notice in this place, although considerable uncertainty attaches both to their individual history and to their works. The elder of them is said to have lived in the eighth, and the younger in the tenth century; and they are both represented as being Christians of the Nestorian sect, but to have exercised their profession at Bagdat. The elder Mesue is principally remarkable as having been among the first who made correct translations of the Greek physicians, and especially of Hippocrates and Galen, into Arabic; for although he appears to have composed many original works, we do not find that they rose into any high repute even among his contemporaries. To the younger Mesue is usually ascribed a treatise on materia medica and pharmacy, which for a long time was in great estimation, and was republished and commented upon even as late as the sixteenth century; it probably contained a full view of the state of the science when he wrote, and is interesting, as it indicates the introduction of several new remedies into medicine; but in other respects it is to be regarded merely as a literary curiosity.†

The last of the Arabians who acquired any considerable distinction as a writer on medical subjects is Albucasis. So little is known of his personal history, that both his birth and the country in which he lived have been the subject of controversy, and appear to be entirely conjectural. His principal works are on surgery; and the reputation which he acquired in this

* *Freind*, lib. ii. p. 491-2. *Haller*, *Bib. Med. lib. ii. §. 139.* *Eloy*, in loco. *Lauth*, p. 282-5. *Enfield*, v. ii. p. 222, 3. *Sprengel*, t. ii. p. 305-22. *Hutton's Math. Dict.*, in loco. *Goulin*, *Enc. Méth. Médecine*, "Avicenne." "Avicenne," in *Biog. Univ.*

† *Freind*, p. 481, 2. *Haller*, *Bibl. Med. Prac. lib. ii. §. 126.* *Eloy*, in loco. *Enfield*, v. ii. p. 231. *Sprengel*, t. ii. p. 325.

department is almost as great as that of Avicenna in medicine. He seems to have been a man of learning and talents, to have made himself master of the writings and practices of his predecessors, and to have improved upon them. The description which he has left of his operations shows him to have possessed a degree of boldness and dexterity which could only exist in one who was well acquainted with his art, and had been habituated to the practice of it. His practice was what we should now consider as unnecessarily severe, making much more use of the knife and of the actual cautery than is done in modern times, and in all respects inflicting both more pain and more permanent injury on his patients. The works of Albucasis appear, however, to have afforded by far the most complete view of the practice of surgery which then existed; and from this circumstance, as well as from their real merit, they were for many ages considered as standard performances, and employed as the text-book in various schools and colleges.*

It remains for us to give an account of two individuals, who, although natives of Spain, and residing principally in that country, were of Saracenic origin, and wrote in the Arabic language—Avenzoar and Averroes. Avenzoar was born at Seville, in the end of the eleventh century, and is said to have lived to the unusual length of one hundred and thirty-five years; but probably some error may have crept into this statement, in consequence of both his father and his son having been, like himself, engaged in the practice of medicine. His principal work, entitled "Thaissy,"† which consists of a general compendium of medical practice, displays more originality and discrimination than the writings of any of the native Arabians; so that, although he was professedly a disciple of Galen, he does not hesitate, on certain occasions, to shake off

* *Freind*, p. 506-524. *Haller*, lib. ii. §. 148. *Eloy*, in loco. *Lauth*, p. 285, 6. *Sprengel*, t. ii. p. 327-32.

† *Freind* designates the Thaissy as "liber qui omnia victus et medicinæ præcepta in plerisque morbis contineret:" p. 493.

his authority when his opinions or practice were not sanctioned by his own experience. We may collect, from certain parts of his works, that he practised both surgery and pharmacy, as well as medicine, properly so called; and we have many valuable observations on each of these departments. Upon the whole, we may consider Avenzoar as respectable both from his general character and his professional skill, and entitled to our regard as one of the improvers of his art.‡

Besides the reputation which Avenzoar derived from his own merits, he was perhaps still more known among his countrymen as being the preceptor of the celebrated Averroes. Averroes was a native of Corduba, and flourished in the twelfth century; he was of illustrious birth, and highly educated in all the branches both of literature and of science which were then taught in the Saracenic colleges of Spain. From certain political causes he was, in the early part of his life, the subject of religious persecution; but he succeeded in repelling the attacks that were made upon his faith, and was finally reinstated in all his former honours and in the public estimation. These circumstances, coinciding probably with the peculiar temperament of his mind, gave to his character a degree of ascetic gloom and austerity; but he appears to have been a man of distinguished worth and of superior abilities. Averroes's professional occupations were principally in a civil capacity; he is therefore to be regarded, not as a practitioner, but as a scholar, who pursued the study of medicine as a branch of physical science. But such was his ardour in the pursuit of general knowledge, and the fondness which he manifested for this particular department, that he made himself intimately acquainted with it in all its details; and in his great work entitled "The Universal," he shows that he was not deficient in any part of the science which could be acquired by the mere study of

‡ *Freind*, p. 492-503. *Haller*, lib. ii. §. 141. *Eloy*, in loco. *Sprengel*, t. ii. p. 332-7.

books. As a philosopher, he was a zealous and obsequious follower of the opinions of Aristotle, and as a physician, of those of Galen; he published many comments on both of them, which acquired the highest degree of reputation, and for many ages were considered as standard performances. Yet there is reason to suppose that he was ignorant of the Greek language, and, like his contemporaries, became acquainted with Aristotle and Galen only through the medium of Arabic translations. The great estimation in which the works of Averroes were held is proved by the number of editions of them which were published from time to time, one of which appeared at Venice so late as the commencement of the seventeenth century. With respect to his medical writings, as they do not profess to be the result of original observation, we cannot be surprised that their reputation is no longer supported. They are, indeed, entirely neglected; and it may be affirmed that, notwithstanding the celebrity which they once enjoyed, and which they so long maintained, they have not left a single permanent addition to the science.*

With Averroes terminated the Arabic or Saracenic school of medicine; after his time we have no writer whose name is sufficiently distinguished to deserve particular mention: even the study of the ancients began to be neglected, while no original observations were made, and no novel opinions or speculations were framed which might tend to exercise the mind or dissipate the darkness which now covered all parts of the world.

If we inquire into the causes of the great celebrity of the Arabian school of medicine, we shall be led to the conclusion that they were rather incidental and factitious, than derived from its absolute merits. It has been justly observed, that a considerable portion of this celebrity must be ascribed to the comparative condition of

* *Freind*, p. 503-6. *Bayle's Dict.*, in loco. *Moreri's Dict.*, in loco. *Haller*, lib. ii. §. 142. *Eloy*, in loco. *Nouveau Dict. Hist.*, in loco. *Enfield*, t. ii. p. 226-231. *Sprengel*, t. ii. p. 337-41.

the neighbouring countries. From the eighth to the twelfth century was, perhaps, the period in which Europe was in the state of the most complete barbarism and superstition. The only remains of a taste for literature and science, or for the fine arts, were found among the Moors and Arabs; and it was from this source, by the intervention of the crusaders, and the intercourse which was thus effected between the Asiatics and the Europeans, that the philosophical and medical writings of the Greeks were first made known to the inhabitants of Italy and of France. And even after their introduction into Europe, it appears that they were for some time read only in Arabic translations, or in Latin versions made from these translations; so that it was not until a considerably later period that they were perused in their native language. Indeed, so completely was the study of the Greek tongue suspended during the dark ages, that it may be doubted whether the writings of the ancient physicians might not have been entirely lost to posterity, had they not been preserved in these translations.

There are, however, two points in which the Arabians conferred a real obligation upon their successors,—the introduction of various new articles into the *materia medica*, and the original description of certain diseases. The additions which the Arabians made to pharmacy consisted partly in the vegetable products of the eastern or southern countries of Asia, which were only imperfectly known to the Greeks, and with which they had no intercourse. Among other substances we may enumerate rhubarb, tamarinds, cassia, manna, senna, camphor, various gums and resins, and a number of aromatics, which were brought from Persia, India, or the Oriental Isles. But a still more important addition which they made to the pharmacopœia consisted in what were styled chymical remedies, such as were produced by some chymical process, in opposition to those substances that were used nearly in their natural state. With respect to the origin of

pharmaceutical chymistry, it may be sufficient to observe, that a rude species of chymical manipulation appears to have been practised in Arabia in the fifth century, that distillation was performed, and that the metals were subjected to various processes, by which some of their oxides and salts were produced. The immediate object of these processes was the transmutation of the metals; an operation which, for many centuries, formed a main subject of attention to almost all the individuals who were considered as cultivators of natural philosophy.

With respect to the second subject alluded to above, the description of new diseases, it is well known that, from causes which are now altogether inexplicable, diseases of the most marked and distinct nature, which are the least liable to be mistaken or confounded with other affections, and which, had they existed, are too violent to have been overlooked, are not mentioned by the Greek and Roman physicians, and are described for the first time by the Arabians. Of these the two most remarkable are the small-pox and the measles. There is some reason to suppose that the small-pox had been known in China, and the more remote parts of India, at a much earlier period; but it is generally admitted that it was first recognized in the western part of Asia, at the siege of Mecca, about the middle of the sixth century, when it raged with great violence in the army of the besiegers. We have remarked above, that the disease was alluded to by Ahrun shortly after its appearance, but it was Rhazes to whom we are indebted for the first clear and distinct account of its symptoms and treatment. There is no subject in the whole range of medical science of more difficult solution than that which respects the origin of diseases, especially such as, when produced, are propagated solely by contagion. The full discussion of this subject would, however, carry me far beyond the limits of this treatise; it is only alluded to in this place as an

historical fact, in connection with the writings of the Arabians.*

We are indebted to them for the transmission of the works of the ancient Greek physicians, to which they made certain additions of insulated facts with respect to the description of diseases; but, with respect to the general principles of therapeutics, the additions, if any, are few and imperfect. In anatomy they made no advances, and we have reason to suppose that the examination of bodies, either in a sound or morbid state, was scarcely practised by them. Medical theory was much attended to, but their theories consisted more in subtle refinements, formed upon the Aristotelian model, than in the study of pathology, or an accurate discrimination of the phenomena of disease. Some little advance appears to have been made in surgery by Albucasis, but he is the only individual who seems to have aimed at improving this branch of the profession; and it may be doubted whether the practice of surgery was not, upon the whole, in a retrograde state during the period of which we are now treating. It is in the department of pharmacy alone that they made any additions of real value; and although in this case it may be attributed more to accidental circumstances than to any enlightened spirit of improvement, yet it is incumbent upon us to acknowledge the obligation, which was both extensive and permanent.†

* On the origin of the small-pox, see *Freind*, p. 524-9; *Mead's* Discourse on Small-pox and Measles, ch. i.; *Thompson's* Inquiry into the Origin of Small-pox; *Plouquet*, *Literatura Digest*, "Variola, Antiquitas, Historia," in loco; ample references may be found in this learned and laborious compilation on all analogous topics, but we may regret that the writer appears to have aimed rather at multiplying his authorities than estimating their value.

† We are indebted to *Freind* for a candid and judicious account of the Arabian medical school, p. 529-33. *Haller's* second book of his *Bibl. Med. Prac.* is devoted to the same subject. See also *Robertson's* Charles V. vol. i. note 28. *Berington's* Middle Ages, App. No. 2. *Gibbon's* History, vol. x. ch. lii. *Ackermann*, cap. xxvii-xxix. *Oelsner*, *Des Effets de la Religion de Mahommed*, p. 196-9: this author is perhaps too much disposed to exalt the merits of the Arabian school. *Kühn*, *Bib. Med. sec. 3*, of what he styles "Fontes Medicinæ," is entitled "Scriptores Medici inter Arabes præcipui," p. 180-6. *Portal*, *Hist. Anat.* ch. ix. "Des Anatomistes et des Chirurgiens Arabes," t. i. p. 143 et seq. *Blumenbach*, *Introd. sect. 6*, "Arabes."

CHAPTER VII.

State of Medicine in Europe after the Extinction of the Arabian School—Medical Schools of Monte-Cassino and Salerno—*Medicina Salernitana*—Constantinus Africanus—Actuarius—Rise of the Study of Anatomy—Mondini—Gilbert—Effect of the Crusades, of the Reformation, and of the Invention of Printing, on the Literature of Europe—On Medical Science—Alchymists—Establishment of Universities—Linacre—Chymical Physicians—Paracelsus—Appearance of New Diseases.

During the flourishing period of the Saracenic school of medicine, which may be considered as extending from the eighth to the twelfth century, the science remained nearly stationary, or was even retrograde among the successors of the Greeks and Romans. We have scarcely a single name of sufficient importance to arrest our attention, and we have no improvements to record, either in theory or in practice. The only attempts that were made in Greece or in Italy during this period, which deserve to be noticed, are connected with the Neapolitan schools of Monte-Cassino and of Salerno, which acquired some degree of reputation in the eleventh century. It was at this period that the physicians attached to the school of Salerno wrote the verses on dietetic medicine, entitled "*Medicina Salernitana*," a work which, as afterward published with the commentary of Arnoldus de Villanova, acquired considerable celebrity, and may be regarded as a valuable document, by its affording, in a small compass, a correct idea of the state of Italian medicine at that early period.*

In connection with this subject we may notice Constantinus Africanus, who is supposed to have flour-

* Haller ascribes the Latin verses of the *Medicina Salernitana* to John of Milan; he remarks, that of this work there had been published "editiones ferè innumerabiles;" *Bib. Med. lib. iii. sec. 140.* See also, *Eloy*, t. ii. p. 599. *Ackermann*, sec. 422. and *Blumenbach*, sec. 114.

ished about the end of the eleventh century. He was, as his name imports, an African; he possessed an ardent desire to obtain knowledge, studied in the schools of Bagdat, and is said to have travelled even into India. At his return to his native country he was regarded as a sorcerer, and was compelled, in order to save his life, to take refuge in Italy, where he was finally attached to the university of Monte-Cassino. He principally employed himself in translating the works of the Greek and Latin physicians into Arabic, which was at that time the general language of science. His translations are, however, said to be incorrect, and his style barbarous; while his works, which are not professed translations, appear to be composed of transcripts from other authors, without any particular merit, either of selection or of arrangement.†

We must mention in this place a writer whose real name has not been transmitted to us, commonly called Actuarius, from the office which he bore in the court of Constantinople.‡ He is supposed to have lived in the twelfth century. The works which he left are numerous, and, although consisting principally of extracts from Galen and the Arabian physicians, with whose writings he appears to have been familiar, are not without some additions derived from his own observations and experience. He is considered as having been the first Greek physician by whom chymical medicines are mentioned, as well as various articles of the materia medica, which were originally introduced by the Arabians. We may regard Actuarius as a diligent collector of facts, acquainted with all the information of his age, and as more free from prejudice and bigotry than the generality of his contemporaries.§

After the extinction of the Saracenic school of Spain, we have an interval of about three hundred years, from the twelfth to the fifteenth century, dur-

† *Freind*, p. 533, 4. *Haller*, *Bibl. Med. lib. iii. sec. 159*. *Eloy*, in loco. *Sprengel*, t. ii. p. 355, 6.

‡ For the origin of the term, see *Adelung*, *Gloss. Man.*, in loco.

§ *Freind*, p. 452-462. *Eloy*, in loco. *Sprengel*, t. ii. p. 241-4.

ing which what are termed the dark ages still remain enveloped in the deepest gloom; every department of science was neglected, and among others that of medicine fell into its lowest state of degradation. What remained, either of literature or of science, was in possession of the monks, who were themselves grossly ignorant, and whose interest it was to preserve mankind in the same state of ignorance. The exercise of the medical profession was principally in their hands, and they still adhered, for the most part, to the doctrines and practice of Galen, but with these they mixed up a large portion of superstition, and had not unfrequently recourse to magic and astrology. By these means they obtained an unbounded influence over the minds of the people, and operated so powerfully on the imagination of their patients as, in many cases, to give an apparent sanction to their confident assumption of supernatural agency.|| The only branch of science which was cultivated with any ardour or success was chymistry. The chymistry of these times can indeed only be interesting to us, as having led indirectly to the discovery of various substances, which have been found of great importance in medicine, to which we have already referred. Its immediate objects were twofold, the transmutation of the baser metals into gold, and the discovery of what was termed a universal medicine, which should possess the property of removing all diseases, and preserve the constitution in a state of health and vigour; objects which, it is unnecessary to observe, were completely vain and illusory. Yet by promoting a spirit of research, and by making the experimentalist acquainted with the various forms and properties of the substances on which he operated, they gave him some insight into the physical laws of matter, and by a gradual, although very slow process, laid the foundation of the splendid improvements of modern science. Many of the alchemists of the dark ages, we can have no doubt, were

|| *Sprengel*, sec. vii. ch. i.

impostors of the lowest description, who were completely aware of the folly of their pretensions; but at the same time there were others who appear to have been the dupes of their own credulity, and who bestowed a large portion of their time and fortune upon these researches. Between these two extremes there were some rare cases of individuals, who may be entitled to hold an intermediate rank, who were sincere and honourable in their views, and, without giving full credit to the professions of the alchemists, conceived that the objects at which they aimed were at least not altogether impossible. To these we may add another class of individuals, consisting of that singular and unaccountable compound of knavery and folly, which is not confined to the subject now under consideration, where it is extremely difficult to draw the line between these two qualities, or to decide which of them forms the predominant characteristic.

The school of Salerno, to which we have referred above, obtained a degree of celebrity from its local situation, this city being one of the great outlets from which the crusaders passed over from Europe to Asia in their expeditions to Palestine, and it was probably from this circumstance that Robert of Normandy stopped at Salerno, in order to be cured of a wound which he had received in the holy wars. It was on this occasion that the verses mentioned above, and which were addressed to him, were written. Upon the decline of the Saracenic universities of Spain, the only medical knowledge which remained was in Italy, where a few individuals, who were not of the ecclesiastical profession, continued to comment on Galen and Avicenna, and occasionally to deliver lectures; but we have a long dreary interval, in which there is nothing to arrest our attention, or to relieve the dull monotony of ignorance and superstition.

During this period the school of Salerno still retained its reputation, and was even favoured with especial privileges by the emperors; but its merits were

probably rather comparative than absolute, for we do not find any improvement that emanated from it, nor any authors whose writings maintained their celebrity after the age in which they were produced. It is, however, in one respect deserving of our notice, as it appears to have been the earliest establishment in which what may be styled regular medical diplomas were granted to candidates, after they had passed through a prescribed course of study, and been subjected to certain examinations. The regulations are upon the whole judicious, and display a more enlightened and liberal spirit than might have been expected in that age, when the human mind was in so degraded a state.* The school of Salerno maintained its celebrity until the thirteenth century, when it was eclipsed by the general diffusion of medical science through Europe and more particularly by the rising reputation of the universities of Bologna and Paris.

It was about this period that we may date the commencement of a practice which has eventually proved of the greatest importance to medical science in all its departments—the study of human anatomy. We have already had occasion to remark that the ancients, even in their most enlightened ages, seldom if ever ventured to examine the human subject, but were content to derive their knowledge of it from the dissection of animals which were supposed the most nearly to resemble it, making up the deficiencies by the casual examinations which were afforded them by accidents or diseases, and perhaps more frequently by supposed analogies, or rather by the efforts of the imagination. The individual to whom the credit is ascribed of having so far overcome vulgar prejudice as to have introduced this most important improvement into his art, is Mondini, a professor in the university of Bologna, who is said to have publicly dissected two female subjects about the year 1315, and who published an anatomical

* *Freind*, p. 535-7. *Eloy*, art. "Salerno." *Lauth*, p. 291, 2. *Ackermann*, cap. xxxi.

description of the human body, which appears to have had the rare merit of being drawn immediately from nature. This work deservedly obtained a high reputation; for three hundred years it was considered as a standard performance, and was used as a text-book in the most celebrated of the Italian universities. Mondini is also entitled to the gratitude of posterity for having given a very early, if not the first example of anatomical plates; the figures were cut in wood, and although, as might be supposed, they were not executed with much elegance or delicacy, they are said to have been correct and expressive.†

About the same time with Mondini lived Gilbert, surnamed Anglicanus, a writer who must be considered as peculiarly interesting to us, from his being the earliest English physician whose name is sufficiently celebrated to entitle him to a place in the history of medicine. There has been much controversy respecting the date of his birth; but it appears the most probable that he flourished in the beginning of the fourteenth century. At this time medical science, as well as all other kinds of knowledge in this country, was in a state of the lowest degradation. There were no public means of instruction in any of the branches of natural philosophy. The light of science, which had dawned in the south of Europe, had not extended to the remote shores of Britain, and the learning of the age, which was confined to the monks, consisted entirely of scholastic disquisitions and the disputations of polemical theology. We are not, therefore, to expect in the writings of Gilbert much of genuine philosophy or of real science; his principal work, which is entitled "Medicinæ Compendium," consists chiefly of subtle distinctions, disquisitions respecting trifling and insignificant topics, with minute divisions of his subject, which lead to no useful purpose or general conclusion. His medical theories are principally taken from Galen,

† *Freind*, p. 546. *Haller*, *Bibl. Anat.* §. 120, t. i. p. 146, 7. *Eloy*, in loco. *Portal*, *Hist. Anat.* t. i. 209-16. *Sprengel*, t. ii. p. 432-4. *Douglas*, *Bibliogr. Anat.* p. 36-9. *Blumenbach*, §. 118.

while his mode of reasoning proceeds upon the technical principles of the Aristotelian dialectics; he adopts the former without discrimination, and employs the latter without judgment. He frequently refers to the Arabian physicians, and there is some reason to suppose that it was through their means, *i. e.* through the medium of the Latin translations of their writings, that he made himself acquainted with the opinions of Galen.*

But although we are compelled to pass this general censure upon the works of Gilbert, justice demands it of us to admit, that his defects may be fairly ascribed to the age and country in which he lived, and that he deserves great commendation for the attempt which he made, however imperfect it may have been. Nor are his works entirely without merit or originality; he has described some diseases in such a manner as to show that, under more favourable circumstances, he might have excelled in the art of making observations; he occasionally gives us some particulars of his practice, which prove that he was capable of exercising a correct judgment in the treatment of the cases which were submitted to him, and we are indebted to him for some additions to the materia medica, and for some improvement in pharmacy.†

About this period a grand political revolution was commencing in Europe, which eventually produced an entire change in the civil condition of its inhabitants, and indirectly affected, in an equal degree, its science and its literature. The feudal system, after being firmly established for some centuries, began to be shaken, perhaps in the first instance, by the crusades. These expeditions, although undertaken from a spirit of gross superstition and bigotry, yet, by giving a degree of excitement to the mind, and still more by making the crusaders in some degree acquainted with the literature of the Arabians, laid the foundation for sub-

* *Harton's Hist. of Eng. Poet.* v. i. p. 443.

† *Freind*, p. 547-50. *Eloy*, in loco. *Aikin's Biog. Mem. of Med.* in *Ct. Brit.* p. 8, 9. *Sprengel*, t. ii. p. 4026.

sequent improvements. There has been much controversy, not only respecting the absolute merit of the Arabian literature, but respecting the influence which it had on that of Europe. On the first of these points, as far at least as regards the medical sciences, I have already offered a few remarks; and on the latter I may observe, that at the period of the crusades, whatever may be our estimate of the absolute merit of the Saracenic schools of learning, they were undoubtedly superior to those of the Christians, if indeed these latter can be entitled to the appellation. The armies of the crusaders were certainly not the best adapted either for appreciating the learning of the countries which they invaded, or for transferring any portion of it to their own; but still an intercourse of two or three centuries could not fail of having produced some effect, and in fact we know, not only that Arabian books were read and studied in Italy and France, but that it was almost exclusively by the medium of these books that the knowledge of the Greek and Roman authors was kept alive.‡

The advantages which were derived to the Europeans from their intercourse with Asia were, however, of but little moment compared to the great events to which I alluded above. The first of these was the capture of Constantinople, in the middle of the fifteenth century, by Mahomet the Second. The Greek monasteries of this city had been for some time the refuge of the learned men who had been driven from Italy by the perpetual wars in which that country had been so long engaged. They had taken with them what they considered as their most precious treasures, the manuscripts of the ancient classical writers, probably regarding them more as objects of curiosity than of real importance. These manuscripts had now been buried for a long time in their libraries, their existence being

‡ *Gibbon*, ch. lxi. *Sprengel*, sect. 7, ch. iii. I must remark that the opinion expressed in the text, respecting the influence of the crusades on the literature and science of Europe, differs in some degree from that of Mr Mills, as stated in his interesting work on the Crusades, v. ii. p. 354-68.

unknown to the rest of the world, when the monks were expelled from their retreats by the Turkish conquerors, and, flying into Italy, carried back with them their classical manuscripts. A spirit of improvement had already begun to manifest itself in this country, which was considerably incited by their guests, who, in their turn, by their change of situation and by the new society into which they were introduced, became more aware of the value of their literary treasures; while their own acquirements, limited as they were, gave them a degree of respect with their new associates which tended to inspire them with a desire of further improvement.*

The other event to which I referred, and which occurred about thirty years after the destruction of the Byzantine empire, was one of infinitely more importance, both in its immediate and its ultimate effects.

Considered in all its bearing, both moral and political, it may probably be regarded as the most important which has ever occurred in the history of civilized society. My readers will not need to be informed that the great event to which I refer is the Reformation. Into the causes of this event, the motives of Luther and his associates, the difficulties with which they had to struggle, and the means by which they succeeded in overcoming these difficulties, it is not our business to inquire. It only remains for me to notice its effects on science, and more particularly on medical science. I have remarked above that a certain degree of mental exertion had begun to manifest itself in the fourteenth century, that this was in some measure brought into action by the excitement produced in consequence of the crusades, and the minds of men were thus prepared to receive the great truths which were so powerfully impressed upon them by the reformers. The first effect, however, of the Reformation was rather unfavourable to the progress of science and literature. The attention was entirely absorbed by the violence of

* *Ackermann*, ch. xxxii. *Cabanis*, § 7.

theological controversy, and the civil feuds which succeeded put a stop to the peaceful labours of the scholar and the philosopher. But if a temporary pause was thus produced, the subsequent advance was proportionally rapid. No sooner were the minds of men delivered from the thralldom of theological bigotry, than they felt a strong impulse to free themselves from the tyranny of opinions on all other subjects in philosophy; and although it still required the lapse of some centuries to shake off the undue authority of Aristotle and Galen, and to form a fair estimate of their real merits, they were at least regarded as fair topics for discussion, while innovators were every day rising up, who ventured to question their infallibility, without the danger of being stigmatized as schismatics and heretics.†

The happy invention of the art of printing, "an art which derides the havoc of time and barbarism," and which fortunately occurred about the same period, most powerfully tended to co-operate with the labours of the reformers, both in religion and in science, by affording them the means of more readily communicating the result of their inquiries, and of preserving the records of knowledge from the danger which they had lately experienced of being totally lost or destroyed.‡ One of the first uses which was made of this important invention was, not only the multiplication of the works of the ancient classics, which had been brought by the Byzantine monks into Europe, but, by making mankind sensible of their value, other works of a similar kind were eagerly sought after, and thus, in the course of a few years, manuscripts were discovered of almost all the classical writings of which we are now in possession.§ The munificence, and even the voluptuous extravagance of Leo X. and the other Italian po-

† *Enfield*, v. ii. book 8, ch. ii.

‡ For remarks on the scarcity and value of books, see *Robertson's Charles V.*, v. i. ch. v. note 10; *Warton's Hist. of English Poetry*, passim; *Berington's Middle Ages*, book vi. p. 507, 8.

§ *Gibbon*, v. x. ch. lxvi. *Warton*, passim. *Berington*, book vi. p. 478 et seq. *Shepherd's Life of Poggio*, passim. *Hallam's Middle Ages*, v. iii. p. 577 et seq.

tentates, by the direct encouragement which they gave to literature and the fine arts, powerfully coincided with the current of public opinion. For, although by inciting the daring spirit of Luther to take those steps of open hostility against the papal authority, which he probably little contemplated in the first instance; they produced effects very different from those originally intended, yet they must be considered as among the indirect causes which conspired to produce the great mental revolution of the fifteenth century.

The science of medicine in its various departments was not slow in partaking of the beneficial effects of the change which we have been describing. The writings of the Greek physicians, which had for some centuries been studied through the medium of Arabic translations, or even of Arabic commentaries, were now read in their original language, or in correct Latin versions.* It was found that Avicenna, Averroes, and the great luminaries of the Saracenic schools, had in many cases either misunderstood or perverted the doctrines and tenets of Galen, and his genuine writings now began to be substituted for the imperfect transcripts of them which had so long occupied their place. The works of Hippocrates were also printed in their original form; but it required a considerably longer period of mental education to enable the bulk of medical readers to appreciate his merits, so that, although various editions of his works were printed, and learned treatises written to explain them, Galen still retained the pre-eminence in public estimation.

A practice began to prevail about the fifteenth century, which very materially contributed to advance the science of medicine, and especially the practical part of it—the publication of monographs of particular diseases and of individual cases, with the reports of hospitals or other public institutions. This plan was not, indeed, altogether new, for we meet with narratives of

* There is reason to believe that Greek was little read in any part of Europe until after the capture of Constantinople in 1453; *Ockley*, pref. p. xii.

cases even in Hippocrates; but it had been either misunderstood or had been so much perverted from its original design and legitimate object, as to have been rendered of little value. Many of these early collections, it must be acknowledged, were formed without judgment, and consisted rather of marvellous stories than of histories from which any practical inference could be deduced; but they served the purpose of inducing a habit of observation, and of directing the attention more to facts than to mere hypotheses. In each succeeding age we find this plan to have been more generally adopted, and at the same time to have been much improved in its method; so that we may undoubtedly consider it as one of the means by which medical knowledge has advanced so rapidly in modern times.

Before I close the second period of the history of medicine, it will be necessary to make a few observations on the progress of chymistry, and on the influence which it had on medical science. I have already made some remarks on the rise of this science, and on the progress which it made among the Arabians, and have stated that it originated in the futile and sordid desire of converting the baser metals into gold. In its primary object it of course totally failed; yet in the numerous and laboured efforts which the alchemists made to accomplish their object, it is admitted that they acquired considerable information about the nature and properties of the bodies on which they operated, and thus produced various compounds, principally of a metallic nature, which were eminently useful in the arts of life, and especially in pharmacy. We further owe to the Arabian chymists the discovery of the process of distillation, and the art of preparing extracts; they introduced the use of sugar into pharmacy instead of honey, in the composition of syrups and conserves; they seem to have made some approach to the formation of the mineral acids, and to have procured several of the earthy and neutral salts.

The art of alchymy was early transferred into the different countries of Europe, and was pursued with as much ardour as by the Arabians, and perhaps with even more superstition and credulity. Some of the alchymists acquired, during their lifetime, a high degree of popularity, and notwithstanding the unphilosophical nature of their occupation, are not altogether unworthy of notice in the history of science. Albertus Magnus, bishop of Ratisbon, Raymond Lully, a Spanish ecclesiastic, and Arnoldus of Villanova, a professor in the university of Barcelona, all flourished in the thirteenth century, and left behind them writings which, although they are encumbered with a mass of folly and mysticism, exhibit in a certain degree the spirit of philosophical research, together with an ample share of industry and patient investigation.† In the same age lived Roger Bacon; he may be classed among the alchymists, inasmuch as he adopted some of their principles and practices; but in the turn of his mind, and in the spirit with which he entered upon his experimental researches, he exhibited a genius which far outstripped the age in which he lived.* The philosopher's stone, which was the object of so much painful research, besides its property of producing gold, was supposed also to possess the power of curing all diseases, and hence obtained the title of the universal medicine. This vain and fantastical notion was indirectly the cause of some pharmaceutical discoveries; for to this we may consider ourselves indebted for the mercurial preparations, and for the experiments of Basil Valentine on antimony, which led to their intro-

† *Freind*, p. 543-5. *Bayle's Dict.*, art. "Albert." *Eley*, "Arnauld de Villeneuve." *Moreri*, art. "Albert," t. i. p. 269; and "Arnauld de Villeneuve," t. i. p. 346, 7. *Ackermann*, §. 446, 7. *Berington*, book v. p. 370. *Sprengel*, t. i. p. 437-443. *Blumenbach*, §. 120-3. *Turner's Modern History of England*, book ii. ch. i. p. 7, 8.

* *Freind*, p. 537-543. *Campbell*, *Biog. Brit.*, in loco. *Bale*, *Scrip. Illust. Brit.* p. 342-4. *Cave*, *Hist. Lit.* t. ii. p. 324-6. *Bayle*, in loco. *Eley*, in loco. *Berington*, book v. p. 373. *Hallam's Middle Ages*, vol. iii. p. 539, note. *Nouv. Dict. Hist.*, in loco. *Sprengel*, t. ii. p. 397, 8. *Wood's History of Oxford*, by *Gutch*, vol. i. p. 332-344. *Enfield*, *Hist. Phil.* vol. ii. p. 346-8; and in *Aikin's Gen. Biog.*, in loco. *Suard*, *Biog. Univ.*, in loco.

duction into medicine about the end of the fourteenth century.

Among the distinguishing features of the period at which we are now arrived, I must not omit to mention the various universities which were established in many of the great cities in the southern parts of Europe, of which the medical chairs, in most cases, formed a very distinguished part. I have already had occasion to mention the university of Salerno, which was the first of these establishments after the destruction of the Roman empire. The next in order of time appears to have been that of Montpellier, which is said to have been established not long after that of Salerno, and which acquired a high degree of reputation, which it maintained for many centuries. We are informed that Bologna had acquired considerable celebrity as a school of medicine in the thirteenth century; that about half a century later medical lectures were delivered in the universities of Vienna and Paris; and that about the same time medical schools were established in Padua, Pavia, Milan, Rome, and Naples, and most of the other cities of Italy, which each of them acquired a certain degree of reputation, necessarily varying with the abilities and characters of their professors, but all contributing to advance medical science, both by the actual acquisition of knowledge, and by the influence which they exercised in removing the undue veneration that was still paid to the writers of antiquity.† In the north of Europe the progress of literature and science was much more tardy. The natural sciences were scarcely regarded as an object of attention, and medicine was still strictly confined to the study of the works of Galen, or even to those of his Arabic translators. The only exception of which our country can boast is Linacre, a native of Canterbury, who, after studying

† The dates of the establishment of the various universities may be found in *Eloy*, t. iii. p. 223. The learned work of *Tiraboschi*, "Storia della Letteratura Italiana," contains the most ample information respecting the universities of that country. See also, *Lauth*, *Hist. d'Anatomic*, liv. v. part 4, sect. 1, §. 2.

at Oxford, travelled into Italy, and spent some time at the court of Florence, where he acquired a portion of that love of literature which so eminently distinguished the family of the Medici. On his return to England he was appointed physician to the royal household, and employed his influence in establishing medical professorships in the universities of Oxford and Cambridge, and in forming the foundation of the London College of Physicians.‡

From the various causes which have been mentioned, and probably from some others of less moment, a spirit of general improvement now began to manifest itself; the arts and sciences gradually revived; philosophy, in all its branches, was studied on a more correct plan and with a more enlightened object, and medicine was not slow in partaking of the beneficial influence. One of the first symptoms of this improvement was an increasing relish for the writings of Hippocrates, and the revival of his method of studying and practising medicine. The taste for complicated theory and refined speculation gradually declined, and in the same proportion the value of correct observation and an accurate detail of facts began to be duly estimated.

A circumstance which tended in a considerable degree to shake the authority of Galen, and to diminish the veneration in which his opinions had been held for so many ages, was the rise of the sect of the Chymical Physicians. After chymistry had been used with advantage for the purpose of improving the processes of pharmacy, it was applied to the explanation of the phenomena of vitality, and of the operation of morbid causes upon the living system. The theories of these chymical physicians we now regard as altogether false and inapplicable; but they were advanced with so much confidence that they obtained many adherents, and for

‡ *Freind*, p. 587-591. We here lose the assistance of this learned and judicious historian. *Eloy*, in loco. *Cabanis*, p. 144, 5. *Sprengel*, t. ii. p. 8. *Aikin's Biog. Mem. of Med.* p. 28-47. In connection with Linacre we may mention the name of Key, Kaye, or, as it was latinized, according to the custom of the times, Caius, whose liberality to the University of Cambridge deserves honourable mention. *Aikin, Biog. Mem.* p. 103-136; and *Gen. Biog.*, in loco. *Eloy*, in loco.

some time the opinions of the medical world were divided between the rival doctrines of the Galenists and the Chymists.

Among the most noted supporters of the chymical theory was Paracelsus, an individual whose claim to our notice depends more upon his consummate vanity and presumption than upon his abilities and acquirements. His professed object was to undermine the authority of the Galenists; and for this purpose he did not hesitate to hold forth the most absurd claims, and to practise the basest arts of quackery. He boasted that he had discovered the elixir vitæ, the universal remedy, of which mankind had been so long in search; and he publicly burned the writings of Galen and Avicenna, because, in consequence of his discovery, they were of no further use. It is somewhat difficult to determine in what degree Paracelsus was actually the dupe of his own folly; but whatever may have been his real opinion of the efficacy of his elixir, his own death, at the early age of forty-eight, served to humble the confidence of his followers, and to reduce his reputation to its real standard.

But although the personal character of Paracelsus received an irreparable shock by this event, his doctrines continued to attract a number of zealous advocates. With respect to the nature of these doctrines, it will be necessary to say but a few words in this place. The leading principle of the Chymists was, that the living body is subject to the same chymical laws with inanimate matter, and that all the phenomena of vitality may be explained by the operation of these laws. The proofs which they adduced in favour of this principle, and the illustrations which they gave of the nature of these laws, were completely futile and unsatisfactory; and it may be asserted that the strength of their reasoning was much more apparent in the mode by which they attempted to controvert the hypothesis of the Galenists, than in the direct arguments which they brought forward in favour of their own doctrine. In truth, the

chymical elements of Paracelsus were at least as hypothetical as the physiological elements of Galen, and were even less applicable to the explanation of the vital actions of organized beings. The only obligation which we owe to the chymical physicians is the introduction into medicine of certain substances, chiefly metallic preparations, which, in the hands of the more enlightened practitioners of modern times, have proved very valuable additions to the *materia medica*.*

After the death of Paracelsus, his peculiar theories fell into disrepute and were little attended to; but the sect of the chymical physicians continued to flourish even as late as the seventeenth century, when we meet with many examples of men of learning and sagacity who attempted to explain the phenomena of the animal economy by the laws of chymistry. To the visionary speculations of the Chymists there was united a large portion of superstition and mysticism; and so much did this feeling coincide with the spirit of the times, that even the men who were most illustrious for their learning and science were either actually infected with these notions, or did not venture so far to oppose the prevailing opinions of their contemporaries as to avow their disbelief of them. Astrology and magic were generally practised by the members of the medical profession, while various rites and ceremonies were observed, which implied the belief of supernatural agency, but which, by a singular inconsistency, was supposed to be a constant and necessary part of the process.

Before we conclude this portion of our subject, we must notice the remarkable circumstance, that about this period, during the fourteenth and fifteenth centuries, some very formidable diseases made their appearance in Europe, the origin of which is still very ob-

* *Le Clerc*, p. 792 et seq. *Barchusen*, Diss. 19. *Conring*, cap. xi. §. 16, 17. *Haller*, Bib. Med. t. ii. p. 2 et seq. *Eloy*, in loco. *Sprengel*, sect. ix. ch. 2. *Cabanis*, sect. ix. *Hutchinson's Biog. Med.* vol. ii. p. 197-209. *Enfield*, vol. ii. p. 451-4. *Aikin's Gen. Biog.*, in loco. *Blumenbach*, Introd. §. 169. *Renauldin*, Biog. Univ., "Paracelse."

scure, after all the discussion and investigation that has taken place respecting them. Among these, one of the most remarkable is what was termed the *Sudor Anglicanus*, which is first mentioned about the end of the fifteenth century, and which, for about fifty years, raged at intervals with extreme violence in England and in some other countries in the west of Europe.* In the fifteenth century we have the first correct description of the hooping-cough; and from the manner in which it is spoken of by the contemporary writers, it would appear that it was considered by them as a new disease. The sea-scurvy, if not entirely unknown to the ancients, was at least not distinctly recognized until this period, so that, if it existed previously, we may conclude that it was less violent in its effects; a circumstance which has been ascribed, with great plausibility, to the spirit of naval enterprise which sprang up at this period, and which led to the undertaking of long voyages.†

The great number of establishments which were formed during the dark ages for the cure of leprosy, was at one time supposed to be a proof that it was a new disease in Europe, imported, as was imagined, from Asia by the crusaders. There has been much nosological discussion concerning the exact nature of the disease to which this term ought to be applied; whether there were actually two species of leprosy, one of which was indigenous in the East, and another species in Europe. Some writers have conceived that a combination of the two was produced at this period, while others again have supposed that the disease had previously existed in Europe, but that, in consequence of the greater degree of communication between the different parts of it, which was brought about by the crusaders, the disease was either more extensively propagated, or at least was brought more into notice, and

* Sennert, De Feb. lib. iv. cap. 15. Freind, p. 567, 8. Plouquet, "Febbris Sudatoria," t. ii. p. 162. Cullen's Synopsis, t. ii. p. 77. 8. Sprengel, t. ii. p. 491-4.

† Freind, p. 583. Sprengel, t. ii. p. 494-6.

that more active means were therefore employed for its relief.‡

It was about the same period, when the western part of the old continent was in its lowest state of degradation, that we hear of the ravages of those varieties of fever emphatically styled the plague, which were described in the thirteenth, fourteenth, and fifteenth centuries as invading various parts of Europe and Asia, and sweeping away a large proportion of the inhabitants.§ The accounts which we have of these epidemics would indicate that they were not an absolutely new disease, but that the symptoms were modified and aggravated by the peculiar condition of the great bulk of the people; a conclusion which is confirmed by the fact, that, as the physical and moral condition of nations has been ameliorated, the occurrence of these diseases has become proportionally rare, so that we conceive them to be almost incompatible with the improvements in civilization and in medical police which exist in the greatest part of Europe.

But whatever may be our opinion concerning the origin of leprosy and the plague, there is another disease where, from the peculiarity of its symptoms, its decidedly contagious nature, the ordinary method of its propagation, and the universality of its occurrence, we are enabled to fix the date of its appearance in Europe with more certainty. It is now generally agreed that it was near the close of the fifteenth century that the symptoms of syphilis were first recognized in Italy, from which country the disease very rapidly extended over the whole of Europe. Concerning its primary origin much controversy has taken place; many writers have attempted to prove that it was brought into Europe from America by Columbus; but this opinion, which was at one time pretty generally received, is now abandoned, nor are we able to offer any plausible

‡ *Sprengel*, t. ii. p. 371-5.

§ *Flouquet*, "Febris Maligna," and "Pestis," in loco. *Cullen*, t. ii. p. 747, 139-41.

conjecture respecting its introduction from any other quarter.

The same difficulty, indeed, exists in this case as in that of all those diseases which are produced by no cause except by a specific contagion. Almost every individual is obnoxious to them upon the application of this cause, and this liability appears to be little affected by constitution, age, habits of life, climate, and other external circumstances. The question is, how were they first produced? It is impossible to imagine that the first created individual was born with all these diseases upon him, yet we know of no distinct cause now in operation which could, in the first instance, have generated them. These remarks apply to the small-pox and the measles, which as was stated above, were first known to the Europeans about the middle of the sixth century, and it applies perhaps still more remarkably to the case of syphilis. This point must be regarded as one of those mysteries of which at present we are unable to offer any solution. It is true that the manners of the age in which this disease is recorded to have first made its appearance were grossly licentious; and in many respects unfavourable to health; but still we see no satisfactory reason why the specific poison of this disease should have been generated; yet it appears impossible to conceive that, if it had previously existed, it could have remained for any length of time unknown or undescribed.*

I have now brought down the sketch of the history of medicine to the period when the light of improvement was bursting forth from various quarters, when men were engaged in the investigation of the different departments of science upon a plan which, although not free from error, was more correct than that of their predecessors, and which, by a slow but steady process, led to the establishment of those principles which event-

* *Freind*, p. 568-583. *Astruc*, De Morbis Veneriis. *Hunter*, on the Ven. Dis. p. 9. 10. *Sprengel*, t. ii. p. 499, et seq. *Plouquet*, "Syphilis, Historia," &c., in loco. *Black's Hist. of Medicine*, p. 147-155.

ually produced the complete triumph of truth and philosophy over error and superstition.

CHAPTER VIII.

General View of the State of Medicine during the Sixteenth Century—Revival of the Hippocratean School—Account of the Galenists—The Chymists—The Anatomists—Vesalius, Fallopius, Eustachius.

I have already given an account of the manner in which the taste for the classical writers of antiquity was gradually developed during the fifteenth century, and I stated that in medicine, as well as in the other departments of science, the Greek writers began to be studied in the original, instead of their being read through the medium of translation and commentaries. As this taste was further matured, the works of Hippocrates continued to rise into estimation in preference to those of Galen, and a new school of medicine was formed, which obtained the name of Hippocratean, the professed object of which was to proceed upon the inductive principle, of first ascertaining facts, and by their generalization to form the theory. That in every instance they adhered to this plan we cannot affirm; indeed we have too many instances where they forgot or misapplied their own principles, but still the importance of accurate observation was generally admitted, and although mankind could not at once abandon their former errors, they became aware of their existence, and of the method by which they might be corrected.

The contest between the Galenists and the Chymists, which agitated the whole medical world during the fifteenth century, was indeed still maintained through the sixteenth; but it was conducted upon more rational principles, and by men of more enlarged and more enlightened views. The Galenists were for the most part

more scientific and learned than their adversaries; they consisted of the professors in the universities and what may be styled the regular practitioners; and although they were still strongly attached to the tenets of their master, they did not omit to collect facts and to watch the phenomena of disease. Their practice may be characterized as being at the same time complicated and inert; their *materia medica* was principally taken from the vegetable kingdom, while their prescriptions were long and multifarious, consisting of a prodigious number of articles, combined together in such a manner as to render it almost impossible to conceive the probable operation of the compound, their indications, at the same time, being derived from an incorrect hypothesis, and being often either unintelligible or impracticable.

The Chymists were the bold empirics of the day, without learning or experience; but they endeavoured to supply the deficiency by confidence and temerity, and by these formidable weapons they frequently triumphed over their adversaries. They discarded the long prescriptions of the Galenists, rejected many of the articles of their pharmacopœia, while they introduced the active metallic preparations, and made free use of the most powerful remedies of all kinds. The rival sects mutually upbraided each other with the injurious effect of their respective plans of treatment, and probably there was but too much foundation for their accusations; for if on the one hand the Chymists, by their rashness committed many fatal blunders, the Galenists, by their feeble remedies, must have frequently failed in subduing disease or arresting its progress.

It appears that, upon the whole, the Chymists, like the analogous characters in the present day, acquired a greater share of popularity than their opponents. Their arrogant pretensions, the more decisive and intelligible nature of their indications, coupled with the artifices which they practised for the mere purpose of acquiring popularity, gave them a decided advantage

over their more learned and more dignified rivals, who were both unable and unwilling to contend with them in the race of empiricism. By degrees, however, the chymical physicians rendered themselves more worthy of the public estimation, by making themselves better acquainted with the principles and practice of their art; the search after the philosopher's stone was gradually abandoned; and although many of the doctrines which they still professed were altogether unfounded, they were less palpably absurd than those of their predecessors.

Another circumstance occurred about the period of which we are now treating, which contributed to produce a most important reform in the science of medicine—I refer to the study of human anatomy. With a very few exceptions, which have been noticed above, during a space of more than a thousand years, since the death of Galen, very little advance had been made in our acquaintance with the structure of the body. The professors of the Arabian school, with their successors in Italy and France, for the most part contented themselves with copying the descriptions of the ancients, without ever calling in question their accuracy, or endeavouring to confirm or refute them by their own observations. Even after the examination of the human subject had been practised for some time, and its necessity generally acknowledged, it was long before mankind could so far free themselves from the tyranny of authority as to admit that any imperfection could exist in the works of Galen, or that his descriptions were not to be preferred even to the evidence of the senses.

In reviewing the state of medical science during the sixteenth century, it will assist us in our progress if we arrange the principal authors under the three classes of the Physicians strictly so called, the Chymists, and the Anatomists. Under the first head we purpose to include both the writers who still adhered implicitly to the tenets of Galen, and those who, paying

less regard to mere authority, devoted themselves more to observing the phenomena of disease, and the effects of remedies, and who may be considered as having laid the foundation of the modern Hippocratean school. Of these, some of the most distinguished by their character or writings were Cornarus and Mercurialis in Italy, Hollerius, Fernel, and Duret in France, Lommius and Forest in Holland, Sennert, Plater, and Foës in Germany, and Linacre in England.*

The limits to which I am necessarily confined will not permit me to enter into any detail of the individual merits of these authors, or into any analysis of their writings or opinions. For the most part, they were possessed of a competent knowledge of ancient literature, and well acquainted with the works of the Greek physicians; many of them were professors in universities or teachers of medicine, and engaged in extensive practice. They were generally diligent collectors of facts, and many of them voluminous writers, either publishing their own observations, or commenting on the ancients. Their practice was, in a great measure, taken from Galen, with the additions that had been derived from the *materia medica* of the Arabians, and in a few instances from the Chymists; but these latter were regarded as dangerous and empirical, and it was not until they had been long sanctioned by popular use that they were received into the authorized pharmacopœias. The actual advance which the practice of medicine received from these authors was not very considerable; but by their learning and diligence, and their general respectability, they contributed to raise the character of the profession, and to prepare the mind to receive the improvements in science which were gradually unfolded in the next century, and to apply them to the department of medicine.

With respect to the Chymists of this period, although they composed a numerous and active body, yet there is none of them whose name is sufficiently distinguished

* *Sprengel*, t. ii. passim. *Cabanis*, ch. ii. §. 10.

above his fellows to require being particularized in this place. As science and knowledge gradually advanced, the absurdity of their speculations was more generally perceived, and their pursuits were either abandoned, or were directed by a more philosophical spirit; and although the search after the universal medicine was not entirely discarded, they began to occupy themselves with inquiring into the chymical constitution of the body, and investigating the changes that were induced in it by disease. This investigation was, indeed, attended with little success; their experiments were crude and imperfect, and their modes of analysis altogether inefficient. But still some important observations were made, and new processes were invented, and the foundation began to be laid for the more enlightened views of their successors in the succeeding century.

But the benefit conferred upon the science of medicine by the labours of the Chymists was trifling and uncertain compared to the great and direct advance which was produced by the researches of the Anatomists. Some attention has been paid to the structure of the body by the earlier Italians, and they had even ventured, in a few instances, to dissect the human subject; yet scarcely any discovery or any improvement deserving of notice had been made for many ages, when Vesalius, about the middle of the sixteenth century, entered upon his career of inquiry. He was the first anatomist who threw off the yoke of authority, which had been imposed by a blind veneration for the opinion of the ancients, and who ventured to conceive the possibility of error in the writings of Galen. Vesalius prosecuted his researches with unwearied diligence; and, disregarding the obloquy which was heaped upon him, he succeeded in publishing an anatomical work, which at this day we behold with admiration, and which maintains its character as a faithful transcript of nature.*

* Eloy, "Vésale." *Haller*, Bib. Anat. lib. 4. §. 163. t. i. p. 180 et seq. *Sprengel*, t. iv. p. 5-9; *Douglas*, Bibliogr. Anat. p. 64-73. *Renauldin*, *Biog. Univ.* "Vésale."

But the reputation of Galen was too firmly established to be affected in any considerable degree by the observations of any single individual, however highly he might be entitled to the respect of his contemporaries. Long and acrimonious discussions occurred between the defenders and opposers of Galen, some maintaining that his descriptions of the parts of the body were absolutely perfect, while others undertook to prove, by direct and palpable facts, that Galen's knowledge of the human form was not complete. It was asserted, on the one hand, that he had seldom examined the human subject, and that his descriptions were frequently taken from apes and monkeys; an imputation which was firmly denied by his zealous advocates. Eustachius, Fallopius, and others of great and deserved reputation for their anatomical skill, undertook the defence of Galen; and it was not until after a long and severe struggle that the truth was established, and that it was agreed that the anatomy of the ancients was in many parts imperfect, and that the errors which had been pointed out by Vesalius actually existed.† It would be foreign to my purpose to enter into a minute examination of the labours of the individual anatomists, or to mention in detail the successive improvements which were effected in their department. With respect to the practice of medicine, which is my more immediate object, it does not appear that they effected any direct improvement; but they contributed indirectly to its advancement, in no small degree, by completely establishing the important point, that the opinions of the ancients were not to be considered as infallible, but were to be subjected to the ordeal of free inquiry.

† *Haller*, Bib. Chir. lib. 5. "Schola Italica;" and Bib. Anat. lib. 5. "Schola Italica." *Fallopius*, §. 200, t. i. p. 218 et seq. *Eustachius*, §. 205, t. i. p. 233 et seq. *Douglas*, Bibliogr. Anat. in Fallopio, p. 94-6, et in Eustachio, p. 98-100.

CHAPTER IX.

State of Medicine during the Seventeenth Century—The Chymical and Mathematical Sects—Progress of Anatomy—Fanatics—Chymical Physicians—Sylvius—Willis—Sydenham—Mathematical Physicians.

All the changes of opinion which we have described as occurring in the sixteenth century, continued to advance with an accelerated progress during the seventeenth. The preference which was given to Hippocrates over Galen was daily gaining ground, and, as the consequence of this, the habit of correct observation was confirmed, and the value of the observations was more justly appreciated.

In the meantime anatomy was making rapid strides. Being a science which depended more immediately upon the accumulation of matters of fact, which required for their attainment little more than industry and mere observation, errors were more readily discarded than on those subjects in which much reasoning was necessary, and in which it was rather an inference from facts than the facts themselves which constituted the object of the investigation. The investigations of the anatomists extended to every part and structure of the body; the forms and texture of the bones, the muscles, the nerves, the vessels, and the various viscera were each in their turn made the subject of particular and minute examination by some of the eminent men of the age. These labours were amply rewarded by the splendid discovery of the circulation by the immortal Harvey, and of the absorbent system by Asselli, Rudbeck, and Bartholine; while the structure and office of the lungs, and the relation which it bears to the heart, were explained by Malpighi, Hooke, Mayow, and their associates.*

* The fourth volume of Sprengel is principally occupied with a luminous view of the anatomical discoveries of this period.

With respect to the chymists of this period, their opinions were gradually disengaged from the tissue of mystery and credulity in which they had been so long involved, when about the middle of the century the science was finally placed upon its correct philosophical basis by the genius of Boyle. He correctly regarded it as an investigation into the change of properties which bodies experience by their action upon each other, and he pursued the investigation, not by presupposing the existence of certain occult causes and hypothetical agencies, but by an accurate examination of the effects which bodies actually produce upon each other, when placed within the sphere of their mutual action.†

It is, however, not a little remarkable that while the science of chymistry generally, and more especially the sect of the chymical physicians, was purifying itself of its grosser errors, we meet with not unfrequent instances where it continued to be combined with a singular degree of fanaticism. There was indeed no period, since the time of Paracelsus, when there were more remarkable examples of the prevalence of this spirit, and in no country were they more notorious than in England. The writings of Fludd, who practised in London in the early part of the seventeenth century, afford a curious compound of learning and folly, of profound erudition, united to an implicit faith in astrology and in all the cabalistic opinions of the Jewish doctors.‡ Perhaps a still more remarkable example of this combination is that of the celebrated Kenelm Digby, a man of rank and of refined education, who, during his travels on the continent, became initiated into this mysterious chymical philosophy, and on his return gave a specimen of his opinions by publishing an ac-

† *Campbell*, *Biog. Brit.* in loco. *Haller*, *Bib. Med. lib.* ix. §. 702, t. iii. p. 109-13. *Nicholson*, *Aikin's Gen. Biog.* in loco. *Morell*, *Brewster's Encyc.* in loco. *Suard et Cuvier*, *Biog. Universelle*, in loco.
 ‡ *Enfield*, v. ii. p. 454, 5. *Sprengel*, t. v. p. 6-9. *Eloy*, in loco; *Haller*, *Bib. Med.* t. ii. p. 469. *Aikin's Biog. Mem. of Med.* p. 271-5. *Hutchinson's Biog. Med.* v. i. p. 303-5.

count of the virtues of the sympathetic powder. § Another of these individuals who obtained great celebrity was Valentine Greatrix, who cured all diseases by the imposition of the hand, and who even ventured to oppose his power in this respect to the royal touch of Charles.* These circumstances are interesting, not merely as forming a part of the history of medicine, but as displaying a singular feature in the history of the human mind; demonstrating the difficulty which exists in eradicating from it errors and follies, even the most gross and palpable, when they have once become deeply rooted. †

While what may be more strictly termed chymistry was advancing into the state of science, a combination was formed between its principles and those of physiology, which gave rise to the new sect of the chymical physicians. Their leading doctrine was, that the operations of the living body are all guided by chymical actions, of which one of the most important and the most universal is fermentation. The states of health and of disease were supposed to be ultimately referrible to certain fermentations, which took place in the blood or other fluids, while these fluids themselves were the result of specific fermentations, by which they were elaborated from the elements of which the body is composed. Again, certain humours were supposed to be naturally acid, and others naturally alkaline, and according as one or the other of these predominated, so certain specific diseases were the result, which were to be removed by the exhibition of remedies of an opposite nature to that of the disease in question. According to the theory of the chymical physicians, fever was supposed to originate in an acid condition of the hum-

§ *Sprengel*, t. v. p. 9; *Eloy*, in loco; *Campbell*, *Biog. Brit.* in loco. *Aikin's Gen. Biog.* in loco. *Nouv. Dict. Hist.* in loco. *Aikin's* (Miss) *Mem. of Charles I.* v. i. p. 410-16. See "A late Discourse," &c., by Sir K. Digby, translated by R. White: a work which affords one of those embarrassing cases, where it is so difficult to assign the exact limit between credulity and empiricism.

* *Phil. Trans.* for 1699, p. 332-4. *Lowthorp's Abrid. of Phil. Trans.* v. iii. p. 11, 12. *Sprengel*, t. v. p. 10. *Hutchinson's Biog. Med.* v. i. p. 373-80.

† *Sprengel*, sect. 13, ch. 1.

ours, and was consequently to be cured by alkalies; and in conformity with what is so often found to take place in tracing the history of medicine, they discovered that alkalies were actually the most efficacious remedies for fever.

The individual who may be considered as having first given a connected and consistent view of the theory of the medical chymists is Sylvius. He was born at Hanau in Flanders in 1614; he graduated in the university of Basil, practised for some time at Amsterdam, and finally was appointed to fill the chair of practical medicine at Leyden, where by his genius and eloquence he acquired a high degree of popularity. From this circumstance his peculiar opinions obtained a very extensive circulation, and the hypothesis of fermentation, with the acid and alkaline states of the fluids, after some time became the fashionable doctrine of the French and German physicians, and had many zealous defenders in our own country.‡

One of the most respectable of the advocates of the chymical doctrines of medicine was our learned countryman Willis. He was only a few years younger than Sylvius, and was early in life attached to the science of chymistry, which he afterward applied with much ingenuity to the explanation of the functions of the animal economy. In the year 1659 he published his celebrated treatise on fermentation and on fever, the object of which is to prove that every organ of the body has its peculiar and appropriate fermentation, and that a morbid state of these ferments is the cause of all diseases. The hypothesis is in itself totally false, but it is supported by considerable ingenuity, and his works are of real value as containing an accurate account of the phenomena of disease. Willis was also the author of some treatises of very considerable merit on the nervous system, and on various physiological topics, by which his reputation is amply supported as

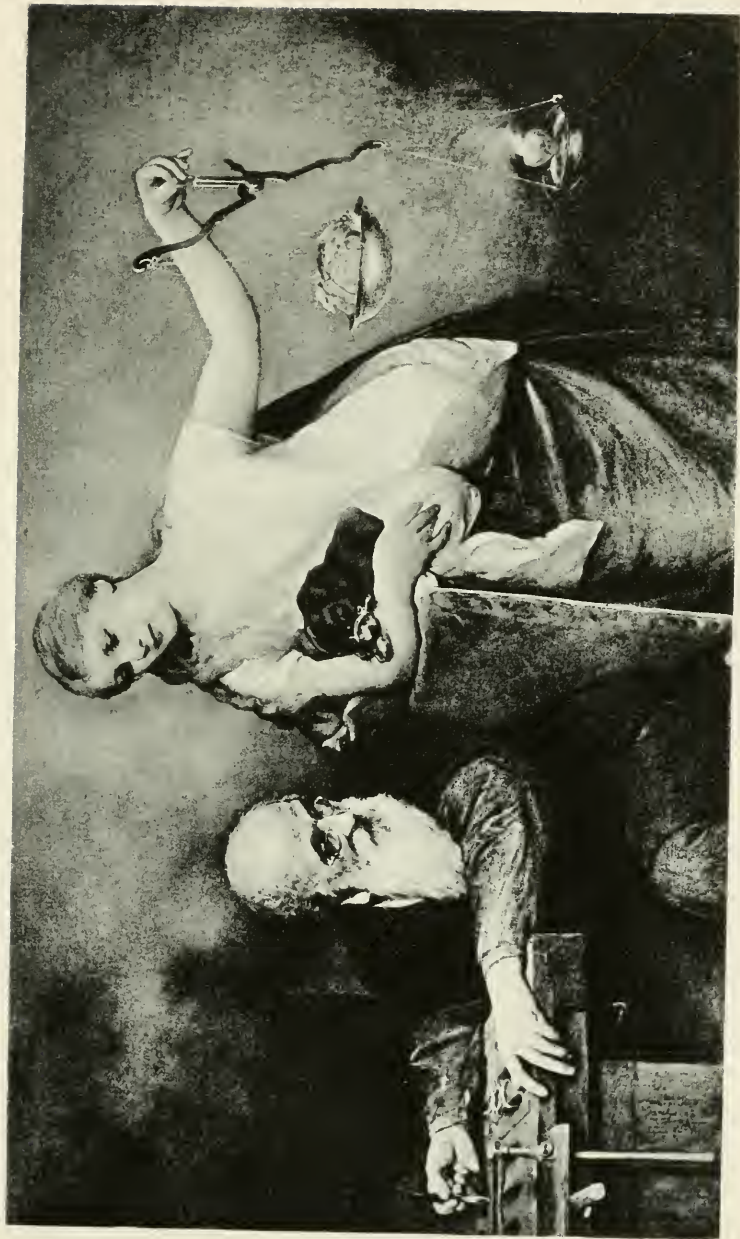
‡ *Eloy*, "Dubois." *Haller*, *Bib. Med. lib. ix. t. ii. p. 627 et seq.*
Sprengel, §. 13, ch. v. *Biog. Univ. in loco.*

one of the most eminent medical philosophers of the age. §

The reputation of Willis has, however, been somewhat obscured by the still higher reputation of Sydenham, a man scarcely inferior to any that has passed under our review. He has been frequently styled the English Hippocrates, and there are various points of analogy between them, both as to general character, and as to their peculiar mode of viewing the operations of the animal frame. The writings of Sydenham, like those of his great predecessor, abound in theory, but they also resemble those of Hippocrates, in containing the most accurate detail of facts, indicative of a mind of great sagacity, which enabled him to seize upon the most essential features of a disease, and to direct his attention to those points alone which tended to illustrate the nature of the morbid changes that were produced. But the great merit of Sydenham, that which has raised his reputation to so high a pitch of celebrity, and which causes his works to be still read with admiration, is the same with that which was ascribed to Hippocrates, viz. not allowing his speculative opinions respecting the nature or cause of diseases to interfere with the treatment. He carefully observed the operation of remedies on the symptoms, and the action of the various external circumstances to which the patient is exposed, and from their effect he deduced his indications. He accommodated his theory to the facts, not, as is too frequently the case, the facts to the theory. He agreed generally with Willis, in ascribing the origin of disease to certain morbid fermentations, and he conceived the primary changes to take place, not in the solids, but, according to the opinion almost universally adopted at that period, in the fluids; this, indeed, may be regarded as a necessary consequence of the assumed hypothesis.

In one important point he agreed very nearly with

§ *Barchusen*, Diss. 23, §. 15 et seq. *Haller*, Bib. Med. §. 685. *Eloy*, in loco. *Sprengel*, t. v. p. 73-6. *Aikin*, in loco. *Biog. Univ.* in loco.



Hippocrates, that diseased action consists essentially in an effort of nature to remove some morbid or noxious cause, and that the great object of the practitioner is to assist in bringing about the proper crisis, and to regulate the actions of the system, so as to prevent either their excess or their defect. The practice was necessarily of a kind which, in the present day, would be styled somewhat inert, consisting rather in attempts to palliate certain symptoms, than in any attempt to counteract or remove their cause. But although we may conceive that the object in view was not always precisely what it would have been, had he not been somewhat biased by his hypothesis, the mode in which he proceeded to effect his indications is, in most cases, very judicious. We may, perhaps, venture to affirm that there are few practitioners, even in the present day, who were better acquainted with the *juvantia* and *lædèntia*, who were more successful in attaining a just medium between excessive caution and undue vigour, and whose proceedings were more guided by the dictates of a sound understanding, enlightened by an extensive range of observation, and an ample store of well-digested experience.*

I have spoken of Sydenham in connection with Willis and the chymical physicians, because in many parts of his writings he adopts the hypothesis, that fermentation and other chymical changes in the state of the fluids are the primary causes of disease. Yet I have been at the same time especially careful to point out that the distinguishing merit of Sydenham consisted in his not manifesting an undue attachment to any theory, but in devoting himself to the study of disease, and the effect of remedies upon it. This merit was not unperceived by his contemporaries, and we learn that he was held by them in great respect. Yet the general spirit of the age was so entirely devoted to hypothesis and speculation, that he can scarcely be said to have made

* *Haller*, Bib. Med. lib. 10, t. iv. p. 188 et seq. *Eloy*, in loco. *Sprengel*, t. v. p. 566-576. *Cabanis*, §. 12. *Aikin*, in loco; *Renauldin*, Biog. Univ. in loco.

any great impression upon the general state of medical opinion, or to have materially diverted the mind from an almost exclusive attention to the theories which were then so prevalent. Indeed, with every feeling of admiration for the character and acquirements of Sydenham, it must be admitted, that he was not himself fully aware of the great principle, which is the foundation of true philosophy, as well in medicine as in every other department of science, that all theory not derived from the generalization of facts is objectionable, and almost necessarily leads to erroneous conclusions. Sydenham's natural sagacity caused him to feel the value of the inductive method, but it was more from this circumstance than from any abstract conception of its importance, that he was induced to adopt it. The state of medical science was indeed scarcely ripe for that reform which had now commenced in many other departments of philosophy. It is more a science of observation than of experiment, and the observations are of peculiarly difficult execution, depending upon the combined operation of various causes, and involving much complication in the effects, the respective proportions of which it is often extremely difficult to ascertain and to appreciate. Hence it required a more matured state of medical knowledge before we could arrive at the great truths which had been promulgated by Bacon, and which were generally recognized in the other departments of science. Although mankind were aware of the importance of observation and experience, they were not sensible of their full value; and it required another century and various successive revolutions of theory, before they could be detached from the hypotheses that had been transmitted to them from their predecessors, and had been sanctioned by the authority of so many illustrious names.*

One of these revolutions was produced by the rise of a new theory of medicine, perhaps more captivating

* We have an ample account of the iatro-chymical sect in Sprengel, §. 13, ch. vi.; its advocates were numerous and respectable, but few were of that distinction which entitles them to be noticed in this sketch.

than any which had yet appeared, from its scientific aspect and its high pretensions; we allude to the doctrines of the Mathematical Physicians, or, as they have been termed, the Iatro-mathematical School. The rapid advance which had taken place in mathematical science during the latter part of the sixteenth century, and the fortunate application of it to various branches of natural philosophy, induced some of the Italians to apply it to the explanation of the phenomena of the living system. Of these, one of the first, both in order of time and celebrity, was Borelli. He was a profound mathematician, and a man entirely devoted to scientific pursuits; and, in his well-known treatise on muscular motion, he illustrated in a very happy manner the mode in which certain functions of the body may be elucidated and explained on mechanical principles. Some of the data which he assumes are now admitted to be incorrect, and in some cases the deductions are not the fair results of the premises; but upon the whole it is allowed that he established many important points, and considerably advanced our knowledge of the animal economy. The new path of inquiry, which had been thus so successfully opened by Borelli, was soon occupied by many of his contemporaries and pupils, and, according to the usual custom on such occasions, it was carried by them far beyond its legitimate limits, and was applied to various topics with which it had little connection. One of the most active and ardent in this pursuit was Bellini, who was a professor at Pisa, and who exhibited such marks of early genius as to become a lecturer at the age of twenty. His acquirements were varied, and his talents were splendid, but they may be pronounced to be rather specious than solid, and to be more adapted to excite applause than to advance true science. The mode of reasoning which had been employed by Borelli to explain the action of the muscles, which is essentially a mechanical function, and where such reasoning was therefore appropriate, was extended by Bellini to all the functions

and actions of the body, both in health and in disease. He maintained, not only that every part of the body is under the influence of gravity and mechanical impulse, but that these are the sole agents, and that we may explain all the vital functions merely by the application of the principles of hydrostatics and hydraulics.

The imposing air of the new hypothesis instantly acquired for it a number of converts, embracing many of the most learned men of the age. The body was regarded simply as a machine composed of a certain system of tubes, and calculations were formed of their diameter, of the friction of the fluids in passing along them, of the size of the particles and the pores, the amount of retardation arising from friction and other mechanical causes, while the doctrines of derivation, revulsion, lentor, obstruction, and resolution, with others of an analogous kind, all founded upon mechanical principles, were the almost universal language of both physicians and physiologists towards the close of the seventeenth century. In proportion as the Mathematical sect gained ground, that of the Chymists declined, while between the two the old Galenists may be considered as nearly extinguished. In Italy and in England the mathematical doctrines had many learned and zealous adherents; it had also some followers in France, although in that country, as well as in Holland and Germany, the chymical theory still continued to prevail.†

When we consider the very great influence which the iatro-mathematical sect exercised over the theories of their contemporaries, we may perhaps be surprised that it did not produce any very decided or immediate effect upon their practice. In fact, their reasoning was more applicable to physiology than to medicine; for while it appeared to afford a satisfactory explanation

† *Sprengel*, §. 14. *Cabanis*, ch. 2, §. 9. In Italy we may select, as among the most eminent of the iatro-mathematical sect, Borelli, Bellini, Castelli, and Guglielmini; in France we have the celebrated Sauvages, and in our own country Pitcairne, Charleton, Keill, Jurin, Mead, and Freind; we may remark, however, that some of these, although practitioners of medicine, are principally indebted for their reputation to their physiological writings.

of the phenomena of muscular contraction, of the circulation, and of the other functions in which motion was concerned, it was obviously less applicable to the explanation of the obscure and secret agencies by which diseased action is either produced or removed when present. It was, indeed, frequently employed by the pathologist to explain the proximate cause of disease and the operation of remedies, but, except in a few instances, it can scarcely be considered as having had much effect upon the actual treatment. For the most part the practice that was adopted by this sect was founded upon the principles of the humoral pathology, and may be said to have been fundamentally that of the Galenists, although with considerable additions, derived from the more energetic treatment and the enlarged materia medica of the Chymists. The great advantage which the science of medicine derived from the Mathematicians was of an indirect nature, depending upon the habit of close reasoning and strict deduction, which is requisite in all mathematical inquiries, and which, although in this instance incorrect in the application, and sometimes even founded upon a fallacious basis, were detailed with much labour and ingenuity, and tended both to improve the intellectual powers of the individual, and to raise the character of the medical profession.

During this period, while the minds of men were engaged in these controversies, and while so much attention was paid to theoretical reasoning, the practical part of the science was apt to be regarded as of secondary importance. Certain individuals, indeed, among whom Sydenham may be mentioned as a most illustrious example, contributed in an eminent degree to improve our knowledge of the phenomena of disease and of the effect of remedies upon it; but it must be confessed that, for the most part, medical men were more anxious to establish their favourite doctrines than to investigate the truth, and we find that, in the account which they give of the details of their practice, they ap-

peared to be much more influenced by the desire of assimilating their experience to the tenets of their sect, than of inquiring how far these tenets were themselves sanctioned by their experience. In some instances there is too much reason to suspect that the operation of the theoretical views of the practitioner was decidedly unfavourable. The opinion which was entertained by the chymical physicians of the nature of the fever, that it depended upon an acrid state of the fluids, led to the indiscriminate use of alkalies in all cases which were considered as belonging to this class of diseases. Again, certain hypothetical opinions which were entertained by the mathematical physicians respecting the mechanical condition of the blood, caused them to employ the lancet in cases where we should now consider it as decidedly injurious. But it does not require the illustration of particular facts to prove the position, that where the theoretical views which were entertained of the nature of the disease were incorrect, and where the practitioner was guided by these views, the result must have been frequently unfavourable. Happily, however, for mankind, there were not wanting individuals who rose superior to the spirit of the age, who disregarded the controversies of the contending sects, and who followed the inductive method of studying medicine which had now been introduced into philosophy by the commanding genius of Bacon. Besides Sydenham, our own country may justly boast of the names of Morton, Mead, and Freind,* who, although not without their bias towards particular opinions, were men of superior minds, who were fully aware of the imperfection of medical science, and of the value of experience, as the means of remedying this imperfection.

* For the character and writings of these eminent physicians the reader is referred to the respective articles in Eloy and Haller, *Bib. Med.*

CHAPTER X.

Account of the sect of the Vitalists—Van Helmont—Stahl, his system—Hoffmann, his system, pathology, influence of his doctrines—Solidism—Baglivi—Disciples of Stahl.

While the medical world was thus divided between the rival opinions of the Chymists and the Mathematicians, a new sect was gradually rising up, which, although in its commencement it was perhaps equally remote from the principles of true science, became by successive improvements freed from many of its exceptionable parts, and finally triumphed over both the contending parties. It originated with Van Helmont, who commenced his philosophical career as a disciple of the chymical school of Paracelsus. He was a man of a powerful mind, but with a considerable mixture of enthusiasm, and even of fanaticism, who became disgusted with the Galenic mode of studying and practising medicine, and embraced the bolder and more efficacious system of the Chymists. But he made this great and essential addition to their doctrine,—that the changes which are produced in the body by its own spontaneous actions, as well as by the operation of remedies, are under the influence of a specific agent, which resides in or is attached to the living system, and to which he gave the name of *archeus*.*

It would not be easy to give any exact definition of the term, or to assign the precise meaning which was attached to it. Sometimes he seems to consider it as an abstract principle or power distinct from the material part of the universe; sometimes as a species of element, and at other times as a certain modification of matter which acquires peculiar qualities or agencies.†

* He probably took the term from Paracelsus, who speaks of it as a new word which he had introduced into medicine; Chirurg. Mag. tract. 2. cap. 15.

† See the section of his "Ortus Medicinæ," entitled "Archeus Faber;" also Castelli's Lexicon, "Archeus."

In consequence of his early training in the chymical school, he occasionally speaks of the archeus as a kind of ferment, and it would appear that he resolves all the operations of the living system and all the functions into certain fermentative processes effected by the action of the archeus. In short, the archeus was the convenient and never-failing aid to which he had recourse for the purpose of explaining all the actions of the system either in health or in disease; it was equally the cause of digestion and of sanguification, of fever and of inflammation. Van Helmont, both from the peculiar turn of his mind and from the course of study to which he had devoted himself, was little qualified to watch over the phenomena of disease, or to discriminate between the nice shades which so frequently serve to characterize the different morbid affections. Accordingly, it does not appear that he introduced any improvement into the practice of medicine, or indeed into any of the collateral departments; he is solely entitled to be noticed in this place as having laid the foundation for a new series of opinions, which were gradually moulded into one of the most important theories which had occupied the attention either of the physician or the physiologist.‡

Although, strictly speaking, Van Helmont must be regarded as the individual who first stated, in express terms, the great and important principle, that the living body possesses powers of a specific nature different from those which belong to inanimate matter, yet so much mysticism and error were mixed with it, that it produced little effect on the opinions of his contemporaries. Nearly half a century had elapsed after his death, during which time the physicians and physiologists were still defending the doctrines of the Chymists and the Mathematicians each against their respective

‡ *Eloy*, in loco. *Haller*, Bib. Med. lib. 8, t. ii. p. 518 et seq. *Enfeld*, v. ii. p. 458-60. *Goulin*, Enc. Méth. Médecine, in loco. *Sprengel*, sect. 13. ch. 3; this author gives us a very minute analysis of the writings and opinions of Van Helmont. Although his absurdities are not concealed, I conceive that the account is somewhat too favourable. *Hutchinson's* Biog. Med. v. i. p. 414-423. *Fournier*, Biog. Univ. in loco.

antagonists, when a new impulse was given to medical theory by the appearance of the celebrated Stahl, who was born at Anspach in the year 1660. His education was almost exclusively occupied with the study of medicine. At the age of twenty-three he became a public lecturer, and from this time he bore a conspicuous rank in his profession, both as a teacher and a practitioner, during the remainder of his life. He was brought up in the principles of the chymical school, and hence his attention was early turned to the study of chymistry, in which science he effected a still greater revolution of opinion than in that of medicine. He possessed a character and disposition well adapted to become the founder of a new sect. He had great activity of mind united to great industry; he was zealous and enthusiastic, at the same time inclined to fanaticism and mystery; he was bold, confident, and arrogant, fully impressed with the importance of his own opinions, and disposed to place little reliance on those of others. His arrogance, however, probably induced him to enter upon investigations which he might not have attempted had he contented himself with following the track of his predecessors, and to his declared contempt for the learning of his contemporaries we may consider ourselves as in part at least indebted for his original speculations, and for the actual additions which he made to our knowledge. This contempt and arrogance were carried to such an extent, that he professed to set little or no value upon any of those studies that are usually associated with medicine, even that of anatomy; and he appeared to pay no regard either to the assertions or the arguments of his contemporaries, when they opposed any of his favourite doctrines. Besides his ardour in the pursuit of medical science, he appears to have had a decided turn for metaphysical reasoning, and in the formation of his theories he was probably influenced by the doctrines of Descartes, which were then embraced by many of the learned men of Europe.

Stahl saw the errors and deficiencies of both the prevailing theories; he therefore laid it down as a fundamental position, that neither chymical nor mechanical reasoning is applicable to the phenomena of life, and he consequently bestowed all his attention on the study of what he termed vital actions. These actions he refers to the operation of a principle which he styles *anima*, and which, in many respects, resembles the archeus of Van Helmont.* The basis of the Stahlian doctrine is similar to that of the Cartesian system, that matter is necessarily and essentially passive or inert, and that all its active properties or powers are derived from an immaterial animating principle, which is superinduced upon it or added to it. It is by the operation of this spiritual principle upon the material organs of the body that all the vital functions are produced, and it is on the absence or presence of this principle that the difference between the living and dead matter essentially depends. Stahl observed with considerable acuteness the action which the mind exercises over the body, and he proved that these effects could not be referred either to a mere chymical or mechanical agent. This point, clear as it now appears to us, had not been distinctly recognized before his time, or rather, it may be said that the contrary opinion formed the basis of both the prevailing theories. But although he laid down this great truth, and established it by incontrovertible arguments, there is considerable obscurity respecting the nature of this immaterial or superintending agent; and when we enter upon the detail of his description, we become involved in a labyrinth of metaphysical subtlety. We are told that the *anima* superintends and directs every part of the animal economy from its first formation; that it prevents or repairs injuries, counteracts the effects of morbid causes, or tends to remove them when actually present, yet that we are unconscious of its existence; and that while it manifests every attribute of reason

* *Physiol. sect. 1. numb. 3. sect. 13, et alibi.*

and design, it is devoid of these qualities, and is in fact a necessary and unintelligent agent. He examined with much attention the nature of the different functions, their relation to the anima, and their dependence upon it; he endeavoured to explain the effect of organization, and the mode in which organization operates in producing these functions. In these investigations he displays considerable acuteness, and he contributed materially to advance our knowledge of the laws of vitality; but still his ideas are, in many respects, confused and indistinct, and he is more disposed to enter into subtle disquisitions respecting the nature of his supposed principle, than to examine the actual phenomena of the animal economy, and from them to deduce his general laws.†

Contrary to what is frequently the case, the hypothesis of Stahl had a considerable influence upon his practice. As all the actions of the system are under the control of the anima, and as the office of this principle is to preserve the system in its perfect state, the duty of the physician is reduced to the mere superintendence of its actions, generally to co-operate with its efforts, or if they should be irregular or injurious, which we are to suppose is seldom the case, to endeavour to restrain or counteract them. These views tended to repress the energy of the practitioner still more than the pathological doctrines of Hippocrates, inasmuch as the anima of Stahl was conceived to exercise a more direct influence over the operations of the economy than the *ψυσις* of Hippocrates, which was simply a general expression of these actions, and which, according to circumstances, might be either beneficial or injurious to the system. As a specimen of the mode in which Stahl applied his theory to practice, we may select his doctrine respecting plethora. He supposed that the body had a general tendency to the plethoric state, because

† *Haller*, Bib. Med. lib. xi. t. iii. p. 575 et seq. *Eloy*, in loco. *Cullen*, Preface to his "First Lines," p. 12-18. *Sprengel*, sect. 15. ch. i. t. v. p. 195-270. *Blumenbach*, §. 420. *Thompson's Cullen*, v. i. p. 164-132. *Renauldin*, Biog. Univ. in loco. *Cuvier*, Hist. des Scien. Nat. t. i. p. 216.

he observed that spontaneous evacuations of various kinds occasionally took place, and these he assumed were produced by the provident care of the anima, in order to remove a plethora which must have previously existed so as to render them necessary. An important office of the superintendent principle is therefore to produce the necessary evacuations, in order to prevent or remove this plethora, and hence it becomes the duty of the practitioner to watch over the evacuations, and to promote them if too scanty, or to repress them if too abundant.*

The theory of Stahl, so far as it tended to fix the attention of the vital actions of the system, and to overthrow the mechanical hypotheses which had so long and so generally prevailed, may be considered as having performed an essential service to the science of medicine. The appearance of metaphysical acuteness which it presented, independent of its real merits, acquired for it a degree of popularity in an age when the attention had been particularly directed to subjects of this description. It certainly produced a considerable revolution both in medical language and in medical opinions; and although Stahl had but few followers, who received his doctrines in their full extent, it was partially embraced by many of the most intelligent and learned men of that period, and it has ultimately had a great and excessive influence on the state of the science. Independently of the defects inherent in the system itself, the spirit of inquiry was now so widely diffused, and the importance of patiently investigating the phenomena of the animal economy was so generally admitted, that the merits of all theories were more strictly canvassed, and subjected to more severe examination. From the same combination of causes, a variety of rival hypotheses were produced, which tended to prevent the exclusive adoption of any one of them in preference to the rest; and the same state of things was still further promoted by the great number of medical

* *Pathol. pars ii. sect. i. mem. 2. §. 3 et alibi.*

schools, which were established in all the great cities of Europe, each of which was anxious to advance its claim to the public attention.

We have given to Stahl the great merit of having clearly perceived and decisively established the important truth, that the operations of the animal economy cannot be explained by the laws either of chymistry or of mechanics, and that we must therefore have recourse to something of a specific nature, peculiar to the living system itself. Yet, although he succeeded in pointing out the insufficiency of the existing theories, the one which he substituted in their place, the action of the superintending anima, was no less difficult to comprehend, was equally hypothetical, and equally liable to objections. His genius was not of a kind which was adapted to slow and patient investigation, and we accordingly find, that he either defends his system upon general grounds, or rests satisfied with merely pointing out the errors and deficiencies of his adversaries. A powerful and sagacious mind was still wanting, which might carefully examine into the nature and operations of the powers that exclusively belong to the living body, and, after ascertaining the facts, might generalize them, and thus deduce the correct theory. This was a process of much labour and difficulty, one which could only be accomplished by slow degrees, and which it might be expected would require the co-operation of various individuals.

Of those whom we should be disposed to regard as having mainly contributed to this gradual progression, the first in point of time, as well as of celebrity, is Hoffmann. He was the contemporary of Stahl, and his colleague in the university of Halle; he may be considered likewise as his rival, for although they both contributed so considerably to advance our knowledge of the animal economy, and, to a certain extent, by pursuing a similar mode of reasoning, yet they were persons of very different habits and dispositions, and attempted to attain the same object by very different

means. Hoffmann was a prolix and discursive writer, whose collected works occupy many folio volumes, and the very titles of which, as detailed by Haller, extend to no less than thirty-eight quarto pages.* It must therefore be supposed that they contain much that is of little value, and exhibit many marks of the hasty manner in which they were composed. Yet he appears to have been a diligent observer and collector of facts, and therefore, notwithstanding the repulsive aspect of his works, they are highly estimated and frequently referred to. He attended much more to the details of practice than his colleague, and, indeed, the basis of his great work, "Systema Medicinæ Rationalis," is essentially practical, in which his physiological and pathological doctrines are, for the most part, introduced in an incidental manner, as supporting or elucidating his practical observations. Of the nature or details of his practice it will not be necessary to enter into any minute examination. It did not differ very materially from that of his contemporaries, although the circumstances of his being less exclusively attached to any single hypothesis has rendered him more disposed to take a candid and unprejudiced view of the various points which would necessarily fall under his observation. In his leading doctrines he must be classed with the mathematical physicians, but at the same time he adopts many of the opinions of the Chymists, and indeed not unfrequently derives his indications from the supposed chymical condition of the fluids. But the great and important addition which Hoffmann made to theory, both medical and physiological, is the distinct manner in which he refers to the operations of the nervous system, and its influence on the phenomena of life. Many of the actions which Stahl ascribes to the action of his hypothetical principle, the anima, Hoffmann explained by referring them to the nervous influence, a physical power no less real than that of gravity or chymical affinity, but of a specific nature and

* Haller, Bib. Med. t. iii. p. 536-576.

operating by its own laws, the knowledge of which is to be acquired by observation and experiment.†

But whatever merit Hoffmann may have had as a practitioner, his reputation with posterity must principally rest upon his merits as a pathologist. Although, as we have stated above, he considered the fluids to be occasionally the primary seat of disease, yet in most cases he conceives it to originate in an affection of the solids. In order to explain this affection, he assumed that what he terms the moving fibre possesses a certain degree of action or tone, which constitutes its natural state, and is necessary for the performance of its functions. Various circumstances, as well external as internal, were supposed either to increase or diminish this tone; if it were increased beyond its true limit, the state of spasm is the result; if it were unduly diminished, the contrary state of atony was produced. This celebrated theory, which, under various modifications, entered so largely into the speculations of most of the pathologists of the seventeenth century, cannot be maintained in all its parts as it was detailed by Hoffmann; it must, however, be admitted that it made a considerable approach to a correct view of the subject, and that it may be regarded as the germ from which the more mature doctrines of his successors immediately emanated. It has been supposed that he borrowed it from the constricted and relaxed fibre of the ancients; but even if we admit that this may have furnished him with the first hint, it was so far new-modelled and extended by him as to deserve the merit of originality.‡

This hypothesis of the nature of the moving fibre, together with the more extensive influence which the nervous system was imagined to exercise over the various operations of the animal economy, may be considered as forming the basis of both the physiology and

† *Thompson's Cullen*, p. 195, 6. *Cuvier*, t. i. ubi supra.

‡ Cullen, in the preface to his "First Lines," bears ample testimony to the value and importance of Hoffmann's physiological speculations, and acknowledges the use which he had made of them in the formation of his own hypotheses.

the pathology of Hoffmann. Unfortunately for the fame of this writer, in consequence of the multiplicity of his works, and the hasty manner in which they were composed, it is very difficult to obtain a consistent or connected view of his theory; but, upon the whole I conceive that he is entitled to the merit of having materially advanced our knowledge of the laws of the animal economy, and still more, of having pointed out the track which might be successfully pursued by others for the further advancement of this knowledge. With respect to the works of Hoffmann it may be further remarked, that as in the course of his experience he gradually enlarged and corrected his pathological doctrines, and continued to publish them from time to time in detached portions, but without giving them in a condensed or abstracted form, we frequently meet with what appear to be inconsistencies and contradictions, and are obliged to collect his opinions rather from inferences and from indirect remarks, than from any clear and explicit statement of them.*

In giving an account of the pathology of Hoffmann, I have somewhat anticipated an important point of medical theory to which we must now revert. I have had occasion in various parts of this history to notice, that through all the succession of opinions, from the time of Hippocrates to the period at which we are now arrived, with a very few exceptions, the hypotheses were all founded upon the humoral pathology. This opinion was maintained equally by the Mathematicians, the Chymists, and the Metaphysicians. The changes that were produced in the system, whether mechanical or chymical, were equally supposed to take their origin from the fluids, while the Metaphysicians imagined that it was upon the fluids that this immaterial superin-

* *Haller*, Bib. Med. lib. x. §. 877. t. iv. p. 536 et seq. *Nouv. Dict. Hist.* in loco. *Eloy*, in loco. *Cullen*, preface to his "First Lines," p. 18-25. *Sprengel*, sect. 15. ch. 2. *Blumenbach*, §. 419. *Goulin*, Enc. Méth. Médecine, in loco. *Thomson's* Life of Cullen, v. i. p. 182-200. *Biog. Univ.* in loco. Of his works the following may be selected as the most original and valuable:—*Systema Medicinæ Rationalis; Medicina Consultatoria; Opuscula Med. Phys.; Consult et Respons. Cent.; Phathologia Generalis; Therapia Generalis; Semeiologia; Philosophia Corporis hum. vivi.*

tending principle exercised its action. We may regard the publication of Glisson's treatise, "De Ventriculo et Intestinis," which appeared in 1671, as having laid the foundation for the change of opinion which afterward took place respecting this doctrine. It was in this work that the hypothesis of muscular irritability was originally brought forward, a specific property, which is supposed to be attached to the living fibre, and from which is deduced its peculiar power of contraction.† But the first writer who systematically opposed the theory of the humoral pathology was Baglivi. He was born near the conclusion of the seventeenth century, and after rising to early eminence in his profession, and acquiring a high reputation for his sagacity in the treatment of disease, and for the assiduity which he displayed in the acquisition of medical knowledge, was prematurely cut off at the age of thirty-four‡ He proceeded upon the Hippocratean plan of watching attentively and accurately describing the phenomena of disease; but he differed from him as to their primary seat, rejecting the principle of the humoral pathology, and placing the causes of them in the altered condition of the solids. His account of the nature of the solids, and the actions of what he terms the moving fibres, is by no means conformable to our modern notions on the subject, and may be pronounced to be incorrect; but the opinion that the fluids are affected secondarily, in consequence of a previous affection of the solids, was a great and important point of theory, which has been gradually gaining ground since the time that it was first promulgated by Baglivi, and may be regarded, with certain modifications, as the current hypothesis of the present day. The doctrine of solidism had, indeed, no direct or immediate effect upon the practice of medicine, but by drawing the attention more to the state of the muscular and nervous systems than to that of

† See especially the fifth chapter of the treatise entitled "De fibris in genere." *Eloy*, in loco.

‡ *Eloy*, in loco. *Haller*, *Bibl. Med. lib. xii. §. 954. t. iv. p. 197 et seq.* *Goulin*, *Encyc. Méth. Médecine*, in loco. *Chaussier et Adelon*, *Biog. Univ.* in loco.

the fluids, it tended to correct many of the erroneous opinions which had previously prevailed respecting the actual condition of the system when labouring under disease, and in this way powerfully contributed to improve our knowledge of the relative state of the different parts of the animal economy, and of the operation of remedies upon it. The gradual subversion of the humoral pathology may also be regarded as a remote cause of the favourable reception with which the doctrines of Hoffmann were received, while the attention which he paid to the action of the nervous system contributed, in its turn, still further to favour the theory of solidism, in opposition to that of the humoral pathology.

The theory of Stahl, notwithstanding its defects and inconsistencies, was calculated to make a considerable impression upon the public mind at the time when it was advanced, and it accordingly met with numerous supporters. It clearly pointed out the inadequacy of all the previous hypotheses, founded merely on mechanical principles, to explain the phenomena of vitality, while it was powerfully recommended by its simplicity; and perhaps even its metaphysical aspect might render it not the less acceptable to his countrymen, who were deeply interested in the speculations of Leibnitz, and the controversy to which they had given rise. It was not, indeed, generally embraced in its full extent; but with certain modifications it remained the favourite doctrine with many of the Germans, until it was gradually superseded by the more correct views of Hoffmann, and still further by the powerful and commanding genius of Haller.

Of the followers of Stahl, who adopted his opinions with the fewest alterations, we may select the names of Juncker and Alberti, who were both of them professors in the university of Halle, of which they contributed for many years to support the reputation which it had acquired under their illustrious predecessors. They were both of them voluminous writers, and they de-

voted a considerable part of their labours to expounding and illustrating the principles of the Stahlian system. But their works being more theoretical than practical, and being intended rather for the purpose of defending certain opinions than for the acquisition of knowledge, are now sunk into oblivion, or are merely referred to as historical records of an hypothesis which formerly engaged so much attention.

With these remarks on the theory of the Vitalists I shall close the review of the state of medical science during the sixteenth century. Up to this period I have adopted the chronological arrangement, and by pursuing this method have been enabled without difficulty to trace the successive stages of the progress of our art. But, as we approach nearer to our own times, the number of subjects which claim our notice are so multiplied, that it will be necessary to continue the historical sketch upon a different plan. Disregarding therefore, to a certain extent, the mere order of time, I shall, in succession, give an account of those individuals who have acquired the greatest degree of celebrity, endeavouring at the same time to class them according to the opinions which they adopted, pointing out their connection with each other, and with the general state of medical science.*

* It may be necessary to observe that I have already somewhat deviated from the chronological arrangement in considering Hoffmann and Stahl as belonging to the seventeenth century, although it was not until near the close of it, in the year 1693 and 1694, that they entered upon their offices as professors at Halle. But by admitting of this irregularity, I have made the division to correspond more nearly with the changes which took place in the state of medical science.

CHAPTER XI.

Introductory remarks—General progress of medical science—Boerhaave, character of his writings, his pathology—Gaubius—Gorter—Haller, his character, pathological doctrines, his disciples, his opponents—Whytt—Semi-animists—Sauvages—Cullen, his pathology and practice, his pupils—Brown, his system—Darwin, his system.

From the revival of letters to the commencement of the eighteenth century, including a period of between two and three hundred years, the great aim and object had been to apply to medicine the same scientific principles which had been found successful in the advancement of the other departments of philosophy. The most distinguished medical writers of that period had therefore employed themselves rather in collecting opinions and in reasoning upon them, than in examining into the grounds on which these opinions had been formed, or inquiring in what degree they were applicable to the explanation of the phenomena of the animal economy. For the most part, as I have had occasion to remark, they failed in their direct object; at the same time, however, a considerable body of information was gradually acquired, and the views which now began to be unfolded in consequence of the pathological speculations of Hoffmann, and the practical observations of Sydenham and the modern Hippocrateans, led to the establishment of the same spirit of inductive investigation in medicine which had been for some time adopted in the other departments of natural science. We have passed over the age of mere learning, and we now enter upon that of observation and experiment. Scholastic disquisitions were completely disregarded, abstract theory was rapidly falling into disrepute, and hypotheses were no longer considered as deserving of attention, unless they professed to be derived from the

generalization of facts. The necessary result of this state of things has been to detach the mind from the arbitrary influence of theory, to diminish the authority of great names, and to induce the inquirers after truth to rest more upon their own exertions, than upon the authority of others. We have, indeed, still to lament the errors and perversions of the human mind, to witness the attempts of ignorance and arrogance to usurp the place which is due to modest desert and patient research; but such attempts, for the most part, have obtained only temporary success, and after an ephemeral celebrity have been consigned to their merited contempt. In the mean time notwithstanding these occasional interruptions, the progress of knowledge has been rapidly and steadily advancing. Experiments, well contrived and patiently conducted, have been performed in every department of physiological and medical science; observations have been made with more minuteness and recorded with more accuracy; our improved knowledge of chymistry has enabled us to introduce the most important reforms into pharmacy, while the discovery of various new articles of the *materia medica* has given us additional and powerful means of opposing the progress of disease.

While Stahl and Hoffmann were promulgating their doctrines in the university of Halle, the celebrated Boerhaave was teaching medicine with equal zeal, and, we may venture to say, with more success, at Leyden.* Boerhaave was originally educated for the profession of theology, but owing to some doctrinal scruples he fortunately relinquished his intention, and devoted himself to the study of medicine in all its branches. There are few examples, either in ancient or modern times, of any individual who arrived at higher eminence, both in general knowledge and in the departments more immediately connected with his profession. His acquaintance with botany and with chymistry were such as to enable him to teach both these sciences with the

* Boerhaave was elected to the chair of medicine in 1709.

greatest success ; while his lectures and his writings on medicine, both theoretical and practical, were long considered as standards of excellence. He had a mind and character peculiarly well adapted for his situation and the age in which he lived, when a variety of new facts and new hypotheses were brought into view, and when it required a consummate degree of judgment to weigh the opposing evidence, and decide between the merits of the contending parties. His moral qualities were no less admirable than his intellectual acquirements ; and if we add to these his elegance as a writer, his eloquence as a lecturer, and his entire devotedness to his profession, we shall be at no loss to account for the celebrity which he enjoyed during his lifetime, and the reputation which he left behind him.

Boerhaave has been compared to Galen, and it may be asserted that he will not lose by the comparison. If Galen possessed more genius, Boerhaave possessed more judgment ; while in their scientific acquirements, and in the extent of their information, it would not be easy to decide between them. They were both eminently skilled in the art of availing themselves of the knowledge of their contemporaries in all the branches of science, of applying it to the elucidation of their particular department, and of modelling and combining into a well-digested system all the scattered materials which they obtained from so great a variety of sources. In the stability of their systems, however, we observe a remarkable difference ; for while Galen's doctrines were implicitly adopted for many centuries, the system of Boerhaave, notwithstanding its real merits and the applause which it obtained during the life of its inventor, shortly after his death was assailed from numerous quarters, and was unable to maintain its ground. The age in which Boerhaave lived was not one of authority, but of investigation, and the enlightened spirit which pervades his own works tended, in no small degree, to foster that taste for inquiry which led his contempor-

aries not to rest satisfied with his theories, however beautiful might be their aspect, and however happily they might appear to explain the phenomena of life, if they were found to be based upon principles which were themselves conjectural and gratuitous.

The great object of Boerhaave, in the formation of his system, was to collect all that was valuable from preceding writers, and by means of these materials to erect a system which should be truly eclectic. The basis of his doctrines is, in a great measure, mechanical, derived from the hypothesis of Bellini and Pitcairne; but he unites with this certain parts of the humoral pathology, and adopts some of the opinions of Hoffmann. To these he added various original observations, by which he has given ample proof of his talents as a sagacious practitioner. His language is remarkably perspicuous, and his reasoning, if we admit his premises, is fair and conclusive. But the grand error of Boerhaave consisted in his depending more upon opinions than upon observations; in his endeavouring to form a system which should be composed of the united speculations of others, rather than to ascertain the correctness of the principles from which these speculations were deduced. His system accordingly met with the fate of all such as are built upon hypothesis; it could not stand the test of experiment and observation, and, notwithstanding the efforts of some of Boerhaave's pupils, who were zealously attached to their master, it was generally discarded in no long period after the death of its inventor. But although the system of Boerhaave may have yielded to the more perfect and enlarged theories of his successors, he must ever be regarded as one to whom the science of medicine is deeply indebted. His *Institutions* and his *Aphorisms* would alone serve to immortalize his reputation as a correct observer and a sagacious practitioner; and if we compare them with any contemporary performance, which is the fair method of judging the

merits of the works of science, we cannot fail to recognise their own superiority.*

In forming his system, Boerhaave was not unmindful of the doctrines of Hoffmann, and particularly of the influence which the brain and nerves exercise over the operations of the animal economy. But although he introduces it on certain occasions, and in some instances allows it to act a prominent part,† yet he was by no means fully aware of the extent of its power. This indeed may be considered as the radical defect of his pathological doctrines; he regards the solids too much in the light of mere mechanical agents, without sufficiently taking into account those properties which specifically distinguish them from inanimate bodies. This deficiency was, to a certain extent, supplied by his nephew Kauw Boerhaave,‡ and by his favourite pupil and successor Gaubius,§ who introduced the agency of the nervous system in many cases where it had been omitted by Boerhaave himself. They were both of them men of considerable talents and acquirements, and the improvements which they made in medical theory were of real value. The writings of Gaubius, especially his Nosology and his Institutions of Pathology, were long held in high estimation, and were employed as text-books in the medical schools.|| In the same connection we may mention the name of Gorter, an eminent professor and practitioner of Harderwyc, who, while, like Boerhaave, he adopted the essential parts of the mechanical theories of his predecessors, made considerable use of the agency of what he termed the vital force in explaining many of the operations of the ani-

* *Haller*, Bibl. Med. lib. xii. t. iv. p. 142 et seq. *Eloy*, in loco. *Cullen*, Preface to his "First Lines," p. 25-35. *Hutchinson's Biog. Med.* v. i. p. 82 et seq. *Nouv. Dict. Hist.* in loco. *Thomson's Life of Cullen*, v. i. p. 200-217. *Blumenbach*, Introd. §. 418. *Goulin*, Encyc. Méth. Médecine, in loco. *Biographie Universelle*, in loco.

† See particularly his work entitled "Prælectiones de Morbis Nervorum."

‡ *Thomson's Cullen*, v. i. p. 219.

§ *Ibid.* v. i. p. 220.

|| *Haller*, Bibl. Anat. t. ii. p. 166, 7. *Eloy*, in loco. *Aikin's Gen. Biog.* in loco. *Thomson's Cullen*, v. i. p. 220, 1. *Desgenettes*, *Biog. Univ.* in loco.

mal economy.¶ The writings of Gorter are very numerous, and prove him to have been an industrious cultivator of medical science, while his great practical work, entitled "Compendium Medicinæ," indicates a talent for correct observation, and an accurate discrimination of morbid symptoms.

But the great support and ornament of the Boerhaavian school was Van Swieten. He was born at Leyden in the last year of the seventeenth century, and was one of the most favoured and meritorious of the pupils of Boerhaave. In consequence of his theological opinions not coinciding with those of the state religion, he was expelled from the university of his native city, in which he held a professorship, and accepted an invitation from Maria Theresa to the court of Vienna. Here honours and distinctions of all kinds were heaped upon him; but these he amply repaid by the unremitting attention with which he devoted himself to the medical school of that metropolis. Of the high reputation which it has since enjoyed he may be said to have laid the foundation, while, by the publication of his Commentaries on the Aphorisms of Boerhaave, he demonstrated, at the same time, the high respect which he retained for his preceptor, and the extent of his own information on all subjects connected with medical science. The Commentaries of Van Swieten contain a large and valuable collection of practical observations, partly the result of the author's own experience, and partly derived from his extensive knowledge of books. He adopted the theory of Boerhaave with little alteration, and in this respect the work must be regarded as fundamentally defective; but the great body of facts which it contains, detailed as they are in a clear and perspicuous style, will always ensure it a place in the library of the medical student.*

¶ *Eloy*, in loco. *Haller*, *Bibl. Anat.*, t. ii. p. 169, 70. *Sprengel*, t. v. p. 314-16. *Thomson's Cullen*, v. i. p. 218. *Renauldin*, *Biog. Univ.* in loco.

* *Eloy*, in loco. *Nauche*, *Biog. Univ.* in loco.

The intimate acquaintance which subsists between the doctrines of pathology and an acquaintance with the laws of the animal economy in its healthy and perfect state, makes it necessary for me to give some account of an individual, who, though not a practitioner of medicine, contributed perhaps more to our knowledge of the nature of disease than any one who has passed under our review. I refer to the great name of Haller, who has been not unaptly termed the father of modern physiology. He was the pupil of Boerhaave, and imbibed from him his thirst for knowledge, his correct judgment, his undeviating candour, his unblemished integrity, and in short, all the intellectual and moral qualities which we have admired in the professor of Leyden. But to these qualities Haller added a more extensive and original genius, which led him never to rest upon the unexamined opinions of others, and a clearness of conception, which taught him, both in his language and in his mode of reasoning, to avoid all ambiguous and undefined terms, and all irrelevant arguments. He possessed a mind at the same time comprehensive and correct, equally adapted for discovering new paths to knowledge, and for investigating those which had been previously entered upon by others. The innate powers of the components of the body, which had been imperfectly seen by Glisson and by Hoffmann, were examined by Haller with his characteristic acuteness, and the result of his long and well-directed research was rewarded by the establishment of his theory of irritability and sensibility, as specific properties attached respectively to the two great systems of the animal frame, the muscular and the nervous, to which, either separately or conjointly, may be referred all the phenomena of the living body. But perhaps a still more important service which Haller rendered to science was the example which he held out of carefully abstaining from all opinions founded merely upon speculative grounds, and of deducing his general principles exclusively from experiment and observation. He

gave an impulse to science no less by the actual discoveries which he made, than by the spirit with which he conducted his researches, so that we may regard the publication of his *Elements of Physiology* as having introduced a new era into medical science.†

It would be incompatible both with the immediate subject of this essay, and with the limits to which it is necessarily restricted, to give a detailed account of the controversies and discussions to which the theory of Haller gave rise. Notwithstanding its merits, and the evidence by which it was supported, it was opposed, either in its full extent or in certain of its parts, by many individuals of high respectability; while on the contrary, various experiments were instituted, by which his conclusions were confirmed and his principles extended. Among those who were the most successful in these researches I may select the names of Zimmerman,‡ Caldani,§ Fontana,|| Tissot,¶ Zinn,** and Verschuur. The last of these physiologists particularly distinguished himself by his experiments on the contractility of the arteries,†† a point which had been left undecided by Haller, but which formed a most important addition to the theory of the action of the vessels, and which had previously been rather assumed as what was probable, than deduced from any ascertained facts.

Whytt and Porterfield may perhaps be considered as the most powerful of the opponents of Haller. They were natives of Scotland, and during the earlier part of the last century, were residents in the metropolis of that kingdom, and bore a conspicuous part in the scientific institutions for which it was so justly celebrated. The former of them was professor of medicine in the university of Edinburgh, at the time when it

† *Elye*, Mém. Acad. Scien. 1777. *Henry's Life of Haller*. *Sprengel*, sect. 15, ch. iii. *Aikin's Gen. Biog.* in loco. *Thomson's Cullen*, v. i. p. 221-240. *Cuvier*, Biographie Universelle, in loco. *Dezvar*, Brewster's Encyc. art. "Haller." *Blumenbach*, Introd. §. 468. *Goulin*, Enc. Méth. Médecine, in loco.

‡ De Irritabilitate.

§ Institut. Physiol.

|| In Haller, sur la Nature Sens. et Irrit. t. iii.

¶ In Haller, sur la Nature Sens. et Irrit. t. iii.

** Exper. circa Corp. Cal. etc.

†† De Arter. et Ven. Vi Irrit.

was rapidly advancing to that high reputation which it afterward more fully attained, under the genius of his illustrious successor Cullen. They opposed that part of the theory of Haller which ascribes all the actions of the living system to certain powers necessarily connected with the material parts of the frame, as well as to the separation of these actions into the two distinct powers of irritability and sensibility.* The controversy which Whytt carried on with Haller was conducted with acuteness and ability, but it manifests a degree of acrimony which it is impossible not to regret, particularly as occurring in an individual who was otherwise so much entitled to our respect. And this is more especially the case when we consider the nature of the objections which he urged against the Hallerian hypothesis, which were rather of a metaphysical nature, than such as were either founded upon experiment or deduced from observation. His doctrine of the vital motions of the body, which formed the principal subject of the controversy, may be regarded as intermediate between that of Haller and Stahl, or rather compounded of the two. He attributes these vital motions to the operation of the sentient principle, which is supposed to be something distinct from the corporal frame, at the same time that it is necessarily attached to it, and is under the influence of physical causes, not like the *anima* of Stahl, acting by a species of independent consciousness and volition. The great error which pervades the speculations of Whytt and Porterfield consists in their reasoning more upon metaphysical than upon physical principles, and in their assuming certain powers, the proof of which rests more upon their supposed necessity to account for the actions of the system, than upon any independent evidence that we have of their existence. They did not, indeed, like the Stahl-ians, consider the sentient principle as something independent of the body, and only, as it were, appended to

* See particularly Whytt on Vital and Involuntary Motions, and Physiological Essays. Porterfield on the Eye, *passim*, and papers in Edinburgh Medical Essays. Thomson's Cullen, v. i. p. 241-258.

it, but as a principle or power necessarily belonging to the living body, and imparting to it its vitality, although essentially distinct in its nature from any of the properties of a mere material agent. Whytt may be regarded as the founder of the sect which obtained the name of the Semi-animists, which, under various modifications, included some of the most distinguished physiologists both in this country and in France. Of the latter, one of the most prominent was Sauvages; he was a native of Languedoc, and received his education at Montpellier, which, during the early part of the eighteenth century, held a very high character as a school of medicine. In 1734, he was appointed one of the professors in the university of that city, and during the remainder of his life contributed materially to maintain its credit by his talents both as a writer and a teacher. His reputation with posterity will principally rest upon his *Methodical Nosology*, a work which contains an arrangement of diseases into classes, orders, genera, and species, on the same plan which had been employed in the arrangement of the subjects of natural history. The *Nosology of Sauvages* is a work of great and original merit, which, although now in some degree superseded by the improvements of later writers, mainly contributed to the advancement of medical knowledge by producing accuracy in the use of terms and in the discrimination of the characters of disease.†

The same kind of service which Haller rendered to the science of physiology was performed for that of the practice of medicine by his contemporary Cullen. Among those who have made the study of medicine their professed pursuit, no one, since the revival of letters, has risen to greater eminence during his lifetime, nor has left behind him a higher reputation than this celebrated individual. During the greatest part of a long life he was engaged in the teaching of medicine or some of the collateral sciences, first in the university of Glasgow, and afterward in that of Edin-

† *Eloy*, in loco. *Haller*, *Bib. Anat.* "*Boissier*," t. ii. p. 300-4, §. 999.

burgh, which latter he contributed, in no small degree, to raise to the rank which it long held, of the first medical school in Europe. His peculiar excellence as a lecturer afforded him an ample opportunity of promulgating and enforcing his doctrines, while their real merit, no less than the mode in which they were announced, rendered them in the highest degree popular among his pupils and contemporaries. He possessed an acute and ardent mind; he was well skilled in the medical literature both of the ancients and the moderns, but he had no undue respect for the opinions of others on the mere ground of authority. He detected the defects of former hypotheses with shrewdness and sagacity, while he proposed his own views with a degree of candour and modesty, which tended to render them the more acceptable, and disposed his audience to receive them in the same spirit with which they were proposed.

With respect to his physiological writings, they afford, in some respects, a remarkable contrast to those of Haller; for while the latter are extended to a great length, and are filled with the most minute and elaborate details, the former are no less remarkable for their compressed brevity, consisting principally in general views and abstracted deductions. Contrary, however, to what is so frequently the case with respect to works of this description, they are not to be regarded as mere speculative positions, but as the condensed result of patient research and extensive observation. Some of the leading doctrines of his pathology were professedly borrowed from Hoffmann; but to these he made many important additions, by taking advantage of the various improvements that had been made in physiological knowledge, principally by means of Haller and his pupils. Still later discoveries in this science, and in that of chymistry, have indeed proved that certain parts of his system are not tenable, and that others require to be considerably altered and modified; but it may be asserted, that no one produced a more powerful

and lasting effect upon the state of medicine, in all its branches, both theoretical and practical, than Cullen. But his great and appropriate merit, and which entitles him to the admiration and gratitude of posterity, is the sagacity and diligence which he manifested in the description and discrimination of the phenomena of disease. In this talent he may be considered as rivalling Sydenham, or any of his most distinguished predecessors, while the recent improvements in physiology and the other branches of medical science gave him an advantage which he did not fail duly to improve. In his treatment of disease he manifested no less judgment and sagacity than in the formation of his theories. He was prompt and decisive, without rashness; he estimated the powers of remedies by a cautious and accurate examination of their effects, with little bias from hypothesis, and with even somewhat of a skeptical disposition of mind, which prevented him from falling into those errors and inconsistencies to which the practice of medicine is so peculiarly obnoxious.

In giving an account of the system of Boerhaave, we remarked that in its formation he proceeded upon the eclectic plan, founding it upon the opinions of others, which he endeavoured to connect together, and to mould into a consistent and uniform theory. Cullen adopted the more philosophical mode of generalization and induction. He disclaims all hypotheses and theories not derived immediately from facts, and made it his great business to collect, by actual observation, the materials from which he might deduce his general principles. In this object he was eminently successful, and it is this which gives his writings their great value, a value which they must ever retain, amid all the revolutions of opinion, which attach to medicine more than to any other branch of science. But, although he was so sensible of the advantage of the inductive mode of investigation, he was not a mere empirical practitioner, who disregarded all theoretical reasoning, and never ventured to go beyond the simple result of experience.

On the contrary, he inquires in all cases into the remote and primary causes of disease, and endeavours to deduce from them his indications of cure. Many of his individual speculations are indeed remarkable for their subtilty and refinement, and may be characterized as exhibiting more ingenuity than judgment. At the same time it is not a little remarkable, that these speculations, however carefully they were elaborated, had but little influence on his practice; and it is gratifying to observe with what caution he applies his hypothesis to explain or direct his method of treating disease.

His great work, entitled, "First Lines of the Practice of Physic," is the one on which his reputation will principally rest; but the merits of his Institutions, of his Nosology, and of his Lectures on the Materia Medica, are each of them sufficient to have entitled him to a distinguished rank among the improvers of medical science. The last of these works, in which he takes a more philosophical view of the operation of remedies than had been done by any of his predecessors, is one of peculiar value. It contains a great variety of important pathological observations, together with a complete theory of therapeutics, and being the latest of his publications, we find in it his more matured and corrected views on many topics which had been treated in his former works. In none of them do we find more of that spirit of rational skepticism to which I have alluded above, and which led him to be more confident in opposing the opinions of others than in maintaining his own. Like Haller, with whom I have already taken occasion both to compare and to contrast him, he contributed to introduce into medical reasoning a philosophical spirit, which has produced a permanent and highly salutary effect upon the healing art, and which associates the name of Cullen with those of the great benefactors of the human race.

It is not easy to give, in a short compass, an account of the pathological doctrines of Cullen, because they consisted rather of a number of individual parts, as

applied to the explanation of particular phenomena, than of one comprehensive system, which constituted a general theory of diseased action. The foundation of the system is, however, sufficiently simple; that the living body consists of a number of organs, which are all of them possessed of powers of a specific and appropriate nature, distinct from those which are attached to inanimate matter. These powers are so ordered that they have a tendency to preserve the whole machine in a perfect state, when its actions and functions proceed in their ordinary course. When any irregularity supervenes, either from internal or external causes, if it be not in an excessive degree, the self-regulating principle is sufficient to control the operation of the morbid cause, and to restore the system to its healthy condition. This regulating principle, or, as it was termed, the *vis medicatrix naturæ*, differs essentially from the archeus of Van Helmont or the anima of Stahl, inasmuch as it is supposed not to be any thing superadded to the body, but one of the powers or properties necessary to its constitution as a living system, and the existence of which is recognized by its effects. Although the laws of gravity and of chymical affinity affect the animal body, so far as it is composed of material organs, yet its appropriate actions are under the immediate influence of the specific law of vitality. Hence all explanations, depending upon mere mechanical or chymical reasoning, were abandoned, and in their place was substituted the vital action of the parts, and more especially that of the extreme branches of the arterial system, or, as they are styled, the capillary arteries. Although it may appear that both Stahl and Hoffmann had, to a certain extent, preoccupied the ground which was taken by Cullen, as to the foundation of his system, and although the system, as detailed by him, is defective in some of its subordinate parts, yet we must admit, that the ample and explicit manner in which it was stated gave it the aspect and much of the merit of novelty, while the applications which he made of it were

frequently just, and always ingenious. His physiology and his chymistry were not in all cases correct; he did not pay sufficient attention to the distinction between the powers of the muscles and the nerves, which had been so well discriminated by Haller, and he even confounds their physical structure. But, with all these abatements, we still regard the pathology of Cullen with much respect, and consider him as one of those who greatly contributed to improve the science no less than the practice of his art.*

What may be termed the Cullenean school of medicine, including both his numerous pupils and the writers who either embraced his peculiar opinions or adopted his method of investigation, comprehends a large portion of the most distinguished of the British physicians during the remainder of the eighteenth century. The rational empiricism, as it has been styled, which he so firmly established, both by precept and example, has, in this country at least, so far superseded the taste for mere speculation and hypothesis, that we are, perhaps, disposed to run into the opposite extreme, and to undervalue all attempts to investigate the abstract principles of pathology, and to employ ourselves solely in the accumulation of facts, without duly attending to the general conclusions that may be deduced from them.*

We have, however, to notice one singular exception to this remark, where an hypothesis was advanced, of the most bold and lofty pretensions, disdaining the support of facts and experience, and professing to explain all the phenomena of life and of disease by a few sim-

* For a minute detail of the opinions of Cullen, and those of his immediate predecessors and contemporaries, the reader is referred to the learned and ample work of Dr. Thomson, which may be characterized as containing a philosophical history of medicine and pathology during the beginning and middle of the eighteenth century. The account which is given of Cullen's pupils must be perused with much interest—an interest which, in the case of the writer of this work, is exalted by the sacred sentiment of filial piety: p. 461, 644-6. I conceive that Sprengel, t. v. p. 359-366, in criticising the doctrines of Cullen, is somewhat deficient in that candour for which he is, in most cases, so conspicuous. See also, *Encyc. Brit. in loco*; *Aikin's Gen. Biog. in loco*; *Kerr, Brewster's Encyc. art. "Cullen."*

* In this brief sketch I can do no more than merely mention the names of some of our countrymen who, either by the publication of

ple aphorisms. In tracing the history of science, although it is proper, for the most part, to estimate books and opinions solely by their intrinsic merit, without any regard to the personal character of the author, yet we find them, on some occasions, so intimately connected, that it is impossible altogether to separate them. This is the case with the celebrated Brown, whose theory appears to have originated as much from spleen and disappointment, and a determination to oppose the doctrines of Cullen, as from a more legitimate motive.

Neither the education of Brown nor his natural character were of the kind the best adapted for the prosecution of medical science. He was originally destined for the ecclesiastical profession; and when he afterward entered upon that of medicine, he never devoted himself to those elementary studies which are indispensably necessary to a correct knowledge either of theory or of practice. But what he wanted in knowledge he endeavoured to supply by the force of his own genius; and by meditating upon a few general or abstract principles, he ventured to form a new system of pathology, which he announced with a degree of confidence that, while it exhibited the strong powers of his understanding, proved no less the deficiency of his information. Medicine, which had hitherto been a conjectural art, was now to be built upon a few certain and fixed principles, which, by superseding all that had been previously written upon the subject, and by being independent both of observation and of experience, required for its attainment little previous study or learning. The novelty of the attempt, the easy access which it promised to a science which before appeared of difficult ap-

single cases, or of monographs on certain diseases, have contributed to the advancement of pathological or practical knowledge. Among others we may select those of Gregory, the able successor of Cullen, Pringle, M'Bride, Huxham, Fothergill, Cleghorn, Brocklesby, Lind, and Russel. In our own times, we have had the no less illustrious names of the Hunters, of Percival, Withering, Johnstone, Falconer, Heberden, Baillie, Haygarth, Ferriar, Currie, Willan, Bateman, Marcet, and Parry. In mentioning the name of Gregory, I must be allowed to express the sentiments of respect and regard which I have always felt for my preceptor. The elegance of his literary taste, his clear and comprehensive judgment, and more especially the interesting mode in which he conveyed his instruction, all contributed to render him one of the most distinguished ornaments of his profession.

proach, and the plausibility of some of its leading positions, acquired for the new theory a prodigious degree of popularity in the university of Edinburgh, where it was first promulgated. Brown had been, in the first instance, patronised by Cullen, but, from some causes, both of a personal and a professional nature, which it is not difficult to comprehend, he forfeited the good opinion, and became the bitter antagonist of the doctrines of his former friend. The controversy to which this schism gave rise was carried on for some years with great vehemence, and was by no means confined to the place where it originated. In this country the Brunonian system obtained many adherents when it was first proposed, principally, indeed, among the students or younger members of the profession; while in some parts of the Continent, more especially in Italy, it was adopted by men of learning and science, and became the prevailing hypothesis in some of the most respectable medical schools.

The general principles of the theory are few and simple. He assumed that the living body possesses a specific property or power, termed excitability; that every thing which in any way affects the living body acts upon this power as an excitant or stimulant; that the effect of this operation, or excitement, when in its ordinary state, is to produce the natural and healthy condition of the functions; when excessive, it causes exhaustion, termed direct debility; when defective, it produces an accumulation of excitement, or what is termed indirect debility. All morbid action is conceived to depend upon one or other of these states of direct or indirect debility, and diseases are accordingly arranged in two great corresponding classes of sthenic or asthenic; while the treatment is solely directed to the general means for increasing or diminishing the excitement, without any regard to specific symptoms, or any consideration but that of degree, or any measure but that of quantity. Such general views and sweeping doctrines, however alluring to the uninformed

or the mere theorist, are altogether inapplicable to practice; and it is a subject for our admiration how they could be for a moment entertained by any one who had studied the phenomena of disease, or who was acquainted with the intricate and complicated relations of the different functions and actions of the living system. Accordingly, in this country, where, in consequence of the prevalence of the Cullenian school, the attention was more directed to practical than to theoretical details, the professed adherents of Brown were neither numerous nor influential; and even in Italy, where for some time it enjoyed considerable popularity, it has long ceased to be maintained. Yet it must always occupy a distinguished place in the history of medical science, as exhibiting a remarkable example of the force of original and unaided genius in erecting a system, plausible and captivating in its aspect, but devoid of the essential support of facts and observations, and therefore fated to share the lot of all systems built on so unstable a basis.*

In connection with Brown I must notice a medical theorist, whose general principles bore a considerable resemblance to those of the "Elementa Medicinæ," but whose character, talents, and acquirements were of a totally opposite kind. The "Zoonomia" of Darwin exhibits genius and originality; but in no other respect does it bear any resemblance to its prototype. Darwin possessed a knowledge of medical and all the collateral sciences in their full extent; he was familiar with practice, and had a taste for minute detail and experimental research, which, while it appeared to qualify him for a medical theorist, enabled him to give to his system an imposing aspect of induction and generalization. His speculations, although highly refined, profess to be founded upon facts; and his arrangement and classifi-

* *Beddoes's* Observations, prefixed to his edition of Brown's Elements; a writer possessed of originality and genius, but perhaps not unaptly characterized by Rothe as "a blind adherent of the new chymists and of Brown." *M'Kenzie*, in Brewster's Enc., art "Brown;" *Parr's* Dict., art. "Brunonian System." *Aikin's* Gen. Biog. in loco. *Sprengel*, t. vi. p. 155-158, 315-334. *Suard*, Biographie Universelle, in loco.

cation, although complicated, seem consistent in all their parts. No theory which had ever been offered to the public was more highly elaborated, and appeared to be more firmly supported by experience and observation, while every adventitious aid was given to it from the cultivated taste and extensive information of the writer. Yet the *Zoonomia* made little impression on public opinion; its leading doctrines rested rather upon metaphysical than upon physical considerations; its fundamental positions were found to be gratuitous, and many of the illustrations, although ingenious, were conceived to be inapplicable and inconclusive. It is now seldom referred to, except as a splendid monument of fruitless labour and misapplied learning.†

CHAPTER XII.

Remarks on the State of Practical Medicine at the Conclusion of the Eighteenth Century—State of Medicine in France, Lieutaud—State of Medicine in Germany, De Haën—State of Medicine in Italy, Morgagni, Burserius, Rasori—Epidemics—Improvements in Pharmacy.

While the British physicians were principally occupied in collecting facts and recording their observations, and, with the exception of the temporary suspension which was occasioned by the Brunonian controversy, were more intent in adding to the stock of knowledge than in forming systems, the continental physicians were more disposed to pursue the eclectic plan of Boerhaave. In France this was accomplished with the most success by Lieutaud. He was a native of Provence, and was for some years a professor at Aix; in 1749 he was appointed physician to the royal hospital

† *Brewster's Enc.*, in loco. *Sprengel*, vol. vi. p. 269, 70, 278, 9. *Young's Med. Lit.*, p. 54, 5. *Brown's* Remarks on the *Zoonomia*, an acute, but rather severe critique. *Suard*, *Biographie Universelle*, in loco.

at Versailles, and finally to the court of France. He was eminent both as a practitioner and an anatomist; his great work, the "Synopsis Universæ Praxeos Medicæ," published in 1765, contains much information on all topics connected with medicine, and is valuable from its real merits in this respect, while it is interesting as affording a correct view of the state of medical science in France at that period. With respect to his general principles, he was an eclectic, uniting certain parts of the old doctrines of the mathematicians and the humorists with those of Hoffmann and the vitalists.* Upon the whole, however, I conceive that I shall not be accused of partiality or want of candour in stating the opinion, that the views of Lieutaud and his countrymen are less matured than those of his contemporaries in this island or in Holland. I may remark, in speaking of France, that for many years the great seat of medical science in that country was Montpellier. Its university was established in the thirteenth century, and was one of the earliest of those which rose to any considerable eminence; a distinction which it maintained until it was rivalled by that of Paris, which gradually acquired its splendid reputation during the course of the seventeenth century. To the name of Sauvages, who was mentioned above as distinguished for his learned work on nosology, we may add those of Bordeu, Barthez, and Astruc as among the most eminent members of the school of Montpellier.†

Of the medical schools of Germany, the most celebrated during the seventeenth and eighteenth centuries was Vienna. I have already mentioned the exertions that were so successfully made for its advancement by Van Swieten, who was appointed one of its professors in the year 1734. After he had occupied this situation for about twenty years, he associated with himself his countryman De Haën, who materially contributed to support the reputation of the university, particularly

* *Hutchinson's Biog. Med.*, vol. ii. p. 63 et seq.

† *Moreau de la Sarthe*, *Encyc. Méth. Médecine*, in loco.

by his talents as a practitioner. His great work, entitled, "Ratio Medendi," is a valuable repository of facts and observations, upon which I may make the same remark that I offered above respecting Lieutaud's "Synopsis." De Haën has been characterized as a man of great learning, united with much practical skill, and a talent for correct observation; but, on the other hand, he appears to have been unreasonably prejudiced against new opinions, and even improvements, in his art; for not only was he one of the most zealous opponents of Haller's theory, but he was no less decided in his opposition to the practice of inoculation, and to the use of various new remedies, which were at that period introduced into medicine, the value of which is now generally recognised. The state of medical theory then prevailing in Vienna was nearly the same with that which was taught in the universities of Leyden and Paris; the doctrines of the humoral pathology may be considered as forming the basis of their hypotheses; but upon these was ingrafted a certain portion of the new views respecting the action of the nervous system and the contractibility of the muscular fibre.

In Italy, which so early acquired a high degree of celebrity for its medical schools, and which still retains a considerable portion of its former reputation, the sciences of anatomy and physiology were cultivated with success, while they were but little attended to in the other parts of Europe. What may be styled anatomical pathology took its rise in Italy in the seventeenth century. The individual to whom the merit of having opened this new road to the improvement of medical knowledge is principally due to Bonet,‡ who was born at Geneva in 1620, and at an advanced period of his life published his great work, entitled "Sepulchretum," which was afterward enlarged by his learned and industrious countryman, Manget.§ The Sepulchretum

‡ *Haller*, *Bibl. Med.* lib. 10, §. 750, t. iii. p. 236 et seq. *Eloy*, in loco. *Dezeimeris*, *Arch. Gén. de Méd.* xx. 158, 9.

§ *Haller*, *Bibl. Anat.* lib. 7, §. 749, t. i. p. 103 et seq. *Haller*, *Bibl. Med.* lib. 11, §. 889, t. iii. p. 603 et seq. *Eloy*, in loco.

has been styled "The Library of true Pathology;" it consists of a great collection of cases, in which we have a history of the disease, with the appearances found upon dissection. The plan which had been commenced by Bonet and Manget was followed up by Valsalva, an eminent professor of Bologna, and still further perfected by the illustrious Morgagni. This eminent anatomist was a pupil of Valsalva's and afterward became professor in the university of Padua, where for nearly sixty years, until his death, which took place in 1771, he devoted himself without intermission to the study of his favourite pursuit. The principal works of Morgagni are, his "Adversaria Anatomica," his "Epistolæ Anatomicæ," and more especially his great pathological collection entitled "De Sedibus et Causis Morborum per Anatomiam indagatis." It proceeds upon the plan of Bonet's Sepulchretum, and contains the observations which were made both by himself and by Valsalva, and has always been regarded as a repository of facts and observations on anatomy and pathology, unequalled in extent and accuracy.*

The Institutions of Burserius afford a favourable view of the state of medical science in Italy at this period. He was born at Trent in 1724; studied first at Padua, and afterward at Bologna; he was for some years a professor in the university of Pavia, and finally removed to Milan, where he died in 1785.† Burserius was rather an eclectic than an original theorist, but his work is much valued for the information which it contains, and much admired for the elegant manner in which the information is conveyed. Like his contemporaries in Holland, France, and Germany, his doctrines are essentially founded upon those of the humorists, but to these he unites various parts of those of the solidists and vitalists, and has proved himself de-

* *Eloy*, in loco. *Haller*, *Bibl. Anat.* lib. 8, §. 797, t. ii. p. 34 et seq. *Haller*, *Bibl. Med.* lib. 12, §. 1029, t. iv. p. 424 et seq. *Renauldin*, *Biog. Univ.* in loco.

† Vide *Præf. ad Instit. Med. Prac. ed. Lips.* 1787.

serving of the praise, not only of learning, but of candour and judgment.

I have already had occasion to remark upon the effect which was produced in Italy by the theory of Brown; it was embraced by many of the learned men of that country, and for some time acquired a considerably greater ascendancy over public opinion than it possessed even in its native city. It was not only defended in their publications, but its doctrines were applied to practice, and it was not until their insufficiency had been detected by fatal experience that the delusion was removed.‡ At the conclusion of the eighteenth century it would seem that the medical theories of the Italians were considerably similar to those of the Cullenian school, and that the Italians, like the English physicians, were little disposed to form systems of medicine, but devoted themselves principally to the cultivation of anatomy and physiology, in addition to the more immediate studies of their profession.

In tracing the additions and improvements which the science of medicine received during the eighteenth century, I must not omit to notice the descriptions of new diseases, either those which were conceived to have actually originated during this period, if there were any such, or those which had not been previously discriminated with sufficient accuracy from others that in many respects resembled them. The various epidemics which, from some unascertained and unexplained causes, have at different times passed over large portions of the surface of the earth; the endemic diseases attached to particular situations, originating in some circumstances connected with the atmosphere, soil, or climate of certain districts, or in the occupation or mode

‡ Rasori of Genoa appears to have been the first who made his countrymen acquainted with the doctrines of Brown, of which he was a zealous adherent; subsequently, however, he found reason, from the result of experience, to change his opinions, and very candidly and honestly expressed his conviction of their erroneous tendency. An ample account of the pathological doctrines which are at present the most generally received in Italy, under the title of "Nuova Dottrina Italiana," may be found in the various publications of Tommasini, the learned professor of Bologna.

of life of its inhabitants; and lastly, the contagious or infectious diseases, which have invaded entire cities or communities, from unknown, or at least obscure causes, and, after spreading destruction on all sides, have disappeared from causes equally unascertained.

The first of these classes, the epidemic diseases, were made an especial object of attention, in the latter part of the seventeenth century, by Sydenham, whose remarks on them are among the most interesting of his works; also by Morton and by Ramazzini; at a somewhat later period we have the valuable observations of Huxham, of Lancisi and Torti in Italy, and of Stoll at Vienna. The science has been much enriched by various descriptions of the disasters incident to the army and navy, among which we may particularly notice those of Pringle, Brucklesby, D. Monro, Hunter, Lind, Hillary, Blaine, Trotter, Larrey, and Desgenettes. § The formidable disease which has been emphatically termed the Plague, as it appeared in London, the Low Countries, Marseilles, Moscow, and other parts of Europe, in the latter part of the seventeenth and the beginning of the eighteenth century, and, as it still exists in Turkey, Egypt, and the adjoining countries, || as well as the less formidable, although more extensive visitation of the influenza, have each had their historians; and it is truly gratifying to observe that, in most cases, the writers have been more anxious to collect facts and to obtain correct information, than to support any particular theoretical views.*

In reviewing the state of medical science during the eighteenth century, and tracing its gradual advance-

§ For a very complete list of works on these subjects, the reader is referred to the valuable work of Professor Ballingall on Military Surgery, p. 227 et seq.

|| Hecker's account of the "Black Death," which ravaged so large a portion of the globe in the fourteenth century, may be mentioned as a work worthy of our notice, both as containing many interesting details of this tremendous pestilence, and as exhibiting a curious specimen of medical hypothesis.

* For the names of the authors who have treated on these topics, I must refer to the respective articles in the Cyclopaedia of Medicine. Copious lists of authors may also be found in Young's Medical Literature, a work no less remarkable for its learning than for the condensed form in which it is communicated. Much valuable information on this subject will be found in Sprengel, sect. 16, ch. 3, art. 2.

ment, we are naturally led to remark upon the great additions which have been made to pharmacy, both in regard to the introduction of new articles into the *materia medica*, and the improvement that has taken place in the preparation of various substances, and in the mode of their administration. It has been remarked, that in proportion as our knowledge of the virtues and qualities of medicines has been matured, our pharmacopœia has been simplified, both as to the number of articles employed and the mode of compounding them. Accordingly, if we compare the successive editions of the British pharmacopœias and dispensatories, we shall find that a number of superfluous and inert substances have been from time to time rejected, and that the complex formulæ of the older physicians have been reduced in the same proportion. At the same time some substances of real efficiency have been added, while the improvement in chymical science has enabled us to obtain the active principles of these substances in much more condensed and commodious forms. This remark may be illustrated by Peruvian bark, a remedy which for a long period afforded a fertile field for controversy, both as to its power over disease, the nature of its operation, and the mode of its administration. Practitioners have long been aware of the futility of most of the points which were the subject of so much warm and even acrimonious discussion, and are satisfied with recognising its value as a powerful curative agent in certain diseases, without endeavouring to discover the nature of the occult qualities on which its operation depends; while the chymist has lent his aid in pointing out a mode by which its active proximate principle may be procured, detached from the inert matter with which it is naturally combined. The skill of the modern chymist has likewise been most beneficially exercised on the metallic preparations; giving them more fixed and definite combinations, pointing out the modes by which they may be produced with more ease and certainty, and ascertaining the chymical relation which they bear

to other substances, so as to indicate how they may be combined with them without decomposition, or even with an increase of their activity.

CHAPTER XIII.

Cursory Remarks on the State of Practical Medicine since the Commencement of the Present Century—Difficulty of acquiring Medical Experience—State of Medicine in Great Britain—Pathologists of France—Physiologists of Germany—Medical Journals—Medical Societies—Schools of Medicine—Suggestions for the Improvement of Medical Science.

As the historian of medicine approaches nearer to his own times, he finds his path encumbered with almost insurmountable difficulties. The subject on which he has to treat differs, perhaps, from every other branch of science in this circumstance, that our actual information does not increase, in any degree, in proportion to our experience. Hence it follows that the accumulation of materials frequently rather retards than promotes its progress. In other sciences, although truth is not to be attained without a certain degree of laborious research, yet to those who are willing to bestow on it the requisite attention, it is, for the most part, attainable, or, if it still eludes our grasp, we are at least sensible of the deficiency, and can generally ascertain the precise nature of the obstacles which impede our progress. In other sciences, when we enter upon an inquiry, or propose to ourselves any definite object for experiment or observation, we are able to say whether the result of our inquiry has been satisfactory, and whether the object in view has or has not been accomplished.

But this is unfortunately not the case in medicine. There are certain peculiarities necessarily connected

with the subject, which render it extremely difficult to appreciate the value of experiment and observation. In our experiments we are seldom able to ascertain with accuracy the previous state of the body on which we operate, and in our observations we are seldom able to ascertain what is the exact cause of the effect which we witness. The history of medicine in all its parts, and especially that of the *materia medica*, affords ample testimony to the truth of these remarks. In modern times, and more remarkably in Great Britain, no one thinks of proposing a new mode of practice without supporting it by the results of practical experience. The disease exists, the remedy is prescribed, and the disease is removed; we have no reason to doubt the veracity or the ability of the narrator; his favourable report induces his contemporaries to pursue the same means of cure, the same favourable result is obtained, and it appears impossible for any fact to be supported by more decisive testimony. Yet in the space of a few short years the boasted remedy has lost its virtue, the disease no longer yields to its power, while its place is supplied by some new remedy, which, like its predecessors, runs through the same career of expectation, success, and disappointment.

Let us apply these remarks to the case of fever, the disease which has been styled the touchstone of medical theory, and which may be pronounced to be its opprobrium. At the termination of the last century, while the doctrine of Cullen was generally embraced, typhus fever was called a disease of debility, and was of course to be cured by tonics and stimulants. No sooner was it ascertained to exist, than bark and wine were administered in as large doses as the patient could be induced or was found able to take. No doubt was entertained of their power over the disease; the only question that caused any doubt in the mind of the practitioner, was, whether the patient could bear the quantity that would be necessary for the cure.

To this treatment succeeded that of cold affusion.

The high character and literary reputation of the individual who proposed this remedy, its simplicity and easy application, the candid spirit which was manifested, and the strong testimonials which were adduced by his contemporaries, bore down all opposition, and we flattered ourselves that we had at length subdued the formidable monster. But we were doomed to experience the ordinary process of disappointment; the practice as usual, was found inefficient or injurious, and it was, after a short time, supplanted by the use of the lancet. But this practice was even more short-lived than either of its predecessors; and thus, in a space of less than forty years, we have gone through three revolutions of opinion with respect to our treatment of a disease of very frequent occurrence, and of the most decisive and urgent symptoms.

Are we, then, to conclude that all medical treatment is of no avail? that it is all imaginary or deceptive? I should feel most unwilling to be compelled to form such a conclusion, nor do I conceive that it necessarily follows from the premises; but the facts certainly prove the importance of extreme caution in forming our conclusions, and still more that mere experience, without the due combination of well regulated theory, is a most fallacious guide. What objection can the man of mere experience, the rejector of all theoretical deductions, urge against the multiplied testimony that is now presented to us in favour of the Homœopathic doctrine?—what answer can be made to the report that has been recently brought forward by the medical commissioners of Paris, on the subject of Animal Magnetism? The conclusion that forces itself irresistibly on the mind is, that no medical testimony is sufficient to establish a fact which is in itself incredible, and that this previous incredibility can only be ascertained by an extensive and accurate knowledge of the functions and properties of the living body, both mental and corporal, in all its modifications and under all circumstances, and by a correct and careful generalization of the knowledge

thus obtained. These considerations, as well as others which will present themselves to the mind of the reader, may be deemed a sufficient reason for my attempting no more than to offer a few general observations on the state of medical science during the period at which I am now arrived. I shall therefore devote this chapter to some cursory remarks on the practice of medicine as it now exists in the different countries of Europe, as well as on the state of some of the collateral or auxiliary departments, and shall conclude by some suggestions for the best means for promoting its future progress.

The prevailing and predominant feeling of the most enlightened and the most judicious of the British practitioners during the period referred to has been to place little value upon theory, and to devote their minds almost exclusively to the observation and collection of facts. There can be no doubt that this is a less injurious extreme than the opposite; but if the statement which has been made above be correct, it will probably be admitted that this statement may be carried too far. And the same exclusiveness has also induced them to pay too little attention to some of the collateral departments of science. In pathology and in pharmaceutical chymistry they have been far outstripped by the French, and in physiology by the Germans. But at the same time that I feel it necessary to pass this judgment on my countrymen, I must admit that the spirit of rational empiricism, to which I have referred above as the characteristic feature of the Cullenean school has produced a most beneficial influence on the general state of medical practice. If it has, on some occasions, produced fluctuation of opinion, and in others indecision or inertness, it has tended to sweep away much error, and to purify the science from many of the antiquated doctrines and practices that still maintain their ground among our continental brethren. This is more especially the case with our pharmacopœias, where, if we compare those of London and Paris, we shall be struck

with the number of what we conceive to be useless articles that are still retained in the latter, sanctioned by the authority of the scientific and enlightened body of men who compose the medical faculty of the French metropolis. We are, however, indebted to France for the most important improvements which have taken place in pharmaceutical chymistry; by their method of obtaining the proximate principles of various vegetable substances, and the greater precision which they have introduced into the formation of the metallic preparations, they have conferred a great and lasting benefit on the art, which among all the revolutions of opinions and practices, can never be countervailed.*

But the glory of French medical science is its pathology. We are justly proud of our Hunters, our Munros, and our Baillie; and there are certain individuals among our contemporaries who are emulously treading in their footsteps. But any feeling of national vanity which we might be disposed to indulge must be effectually repressed when we look at the illustrious band of French pathologists, when we review the labours of Pinel, Andral, Breschet, Broussais, Corvisart, Cruveilhier, Dupuytren, Laennec, Bayle, Louis, Gendrin, Foville, Chaussier, and others,† who have directed their attention more exclusively to pathology; and when we add to these the names of those who are to be regarded more in the light of physiologists, Bichat, Vic-d'Azyr, Cuvier, Richerand, Majendie, Edwards, Dumas, Legallois, Adelon, Demoulins, Serres, Blainville, Flourens, St. Hilaire, Dutrochet, and others, we must admit that

* We have a very learned review of the state of medicine during the early part of the present century from the pen of the celebrated Sprengel. It is peculiarly valuable, from the numerous references which it contains to the writers of Germany, and from the view that it presents of the opinions which prevail in that country. The German physiologists afford a singular admixture of profound investigation and fanciful mysticism.—Ed. Med. Journ. v. xii. p. 385 et seq. We have also an interesting sketch of the progress of the science by Cuvier; Hist. Scien. Nat. t. i. p. 311-344, and t. iv. p. 2303-44.

† I may refer my readers for an interesting account of the progress of pathology, since the commencement of the present century, to a series of papers in the Archives Générales de Médecine, by M. Dezeimeris, t. xxix. et seq. The "Dissertation" of Professor Alison, appended to the "Cyclopædia of Practical Medicine," contains an admirable view of the state of medical science generally during this period.

France exhibits an unrivalled assemblage of medical philosophers. From the united labours of these eminent men it is impossible not to anticipate the most important results; but I believe that I am justified in asserting that, so far as the practice of medicine is concerned, the benefit is still rather in anticipation than in existence. With certain exceptions, but these no doubt very important ones, I should characterize the French practice as decidedly less effective than that of our country; dependence is placed on remedies which we conceive to be inert, and much of the dietetic regimen which enters so largely into the treatment can produce no effect in the removal of disease. In short, their "médecine expectante," although it may be a less dangerous weapon in the hands of ignorance or presumption, is, in the same proportion, less powerful and beneficial when under the direction of skill and judgment.

If France is pre-eminent for its pathology, Germany is no less so for its physiology and its anatomy. The names of Camper, Blumenbach, Ludwig, Soëmmering, Meckel, Wrisberg, Reil, Tiedemann, Wenzel, Sprengel, Jacobsen, Carus, Pfaff, Oken, Osiander, Ackermann, Rosenmüller, Gmelin, Walter, and Treviranus may be selected from many others, as among the most celebrated throughout Europe, and as having made most important additions to our knowledge on the subjects to which they have particularly directed their attention. Yet, in Germany, as in France, the effect of this scientific co-operation on the practice of medicine is not yet fully experienced. The treatment of disease is perhaps not more effective than in France, while it is still more encumbered with complicated formulæ and with antiquated practices, which in this country have been discarded because they have been found useless or even injurious.* Italy, which so long ago took the lead in all

* In speaking of the practical writers of Germany, it would be unjust to omit the name of Frank, and not to acknowledge the obligation which he has conferred upon medical science. Among the pathologists, Hartmann of Vienna and Conradi of Göttingen are perhaps the best known in this country.

scientific pursuits, now offers the aspect of a splendid ruin, where we occasionally meet with an illustrious name, such for example as those of Scarpa, Caldani, Mascagni, Rolando, Bellingeri, and Tommasini, but where medical science, if it has not retrograded, has at least remained stationary. The practice of medicine has, however, had some zealous cultivators; I have already remarked on the activity with which the Brunonian controversy was pursued, and the excitement which was then produced seems to have had a beneficial effect in rousing the dormant energy of the mind, of which some traces are still visible.

A circumstance which has materially contributed to the improvement of the knowledge of practical medicine is the publication of periodical works, whether in the form of journals or of the transactions of societies. They have brought before the public the daily occurrences and passing events in a commodious and interesting form, and thus by exciting attention to them, have tended both to diffuse and to increase our knowledge on these subjects. It is, however, very much to be regretted that so valuable a mode of communication should, in too many instances, be used as the medium of personal animosity, and that what ought to be employed for the promotion of the welfare of mankind should become a vehicle of the basest and the most malignant passions. On this point, as well as on the one referred to above, justice compels me to state that the French metropolis offers us an example by which we might profit, in the number, extent, and general character of its medical periodicals; and the same sentiment leads me to remark, that the medical periodicals of London are decidedly excelled by those of Edinburgh and Dublin.—Among the published transactions of medical societies, the *Medico-Chirurgical* may fairly be selected for our approbation; these, in the short space of about twenty-four years, have amounted to eighteen volumes, and have acquired a character which is too well established to require recommendation or sanction.

In connection with their transactions I may mention the effect of the societies themselves, which, when they are confined to subjects of medical science, must be highly beneficial. Perhaps no single institution has contributed more to the improvement of our profession than the Edinburgh Medical Society, which, for so long a period, has maintained a reputation that reflects the greatest credit, not merely on its members, but even on the university to which it is attached. It is, indeed, a remarkable and an honourable circumstance, that an association, principally composed of students and entirely conducted by them, should have proceeded for above half a century in so uniform a course of respectability; that during this period they should have admitted of free discussion, without deviating into licentiousness, and that amid the fluctuations to which such an association must necessarily be subject, successors have at all times been found able to direct its progress and qualified to support its reputation.

Another circumstance to which I must briefly advert, which is both the cause and the consequence of the progress of our art, is the improved state of medical schools of all descriptions, both those attached to universities or to public hospitals, and those conducted by private individuals. By a very singular anomaly it has happened that, in this country, the highest medical honours have been hitherto conferred by those bodies who did not profess to give the requisite means for their attainment. This circumstance may, indeed, in one point of view be regarded as paying the highest compliment to the English universities; but I believe that a very general sentiment now prevails among their most respectable members that this anomaly ought no longer to be suffered to exist, and that medical honours ought to be bestowed upon those, and those only, who have gone through what may be considered a sufficient course of preparatory studies, and who are able to give satisfactory proof that they have taken the due advantage of the means of improvement presented to them.

But whatever may have been wanting in the English universities has been long supplied by that of Edinburgh, and, at a later period, by those of Glasgow and Dublin. The great London hospitals, and some of the private schools, especially those of anatomy, have, for a number of years, possessed teachers of the highest talents, and most admirably qualified for their office; but our metropolis could not be said to hold out the means of a complete medical education previous to the establishment of the London University and the King's College. These rival schools, rivals as I trust they will always be only in the talents of their professors and the excellence of their arrangements, have each of them laid down an academical course of medical instruction, which appears to be complete in all its parts, and which must have the most salutary influence on the character and qualifications of the future members of the profession.

The perusal of the foregoing pages may, I hope, enable my readers to form a tolerably accurate conception of the progress of practical medicine, of the obstacles which it has had to encounter, of the degree in which it has overcome these obstacles, and of its present state of improvement. This I am not disposed to underrate; but at the same time I must acknowledge, that when I reflect upon the immense mass which has been written on the subject, the result seems scarcely adequate to the labour that has been bestowed. I may, therefore, be pardoned if I offer a very few remarks on the means by which, as it appears to me, the object in view might be more effectually attained.

This, I conceive, should be attempted precisely upon the same plan as in other departments of science;—in the first place, by a more careful exposition of facts; and, secondly, by a more careful generalization of them. In medicine there are various circumstances which render it less easy to ascertain the facts than in most other cases. These depend partly on the nature of the subject, and partly on the situation and character of the

observer. It was the shrewd remark of a learned professor that in medicine there are more false facts than false opinions. On all topics, either historical, scientific, or literary, mankind possesses a strong avidity for the marvellous. From the consideration of the human mind, the love of novelty is one great principle by which the attention is excited and the intellectual powers are called into action. Hence, in a rude state of society, nearly the whole art of medicine consists in the dexterous employment of this agent, and hence it is still found the most effectual method of attracting the notice of the multitude, who are incapable of close reasoning or calm investigation.

Perhaps one of the most easy and at the same time the most effective means of counteracting this mischievous influence, would be never to receive the evidence for any medical facts upon the authority of a single individual. They should, if possible, emanate from associated bodies, either from public hospitals, medical schools, or societies, the officers of which may afford their united testimony to the alleged facts. Another point which appears to me of vital importance, and which bears essentially upon every department of medicine, is that nothing should be received without the name of the author. The custom of anonymous writing, which has of late increased to so great an extent, has produced the most unhappy effects, both on the state of medical science and on the character of its professors; it has given rise to a degraded and depraved taste, no less at variance with honour and honesty, than with the spirit of scientific research. I will venture to assert that no man ought to publish any statement or any opinion to which he would scruple to attach his name. It may occasionally happen that an individual of a timid or a modest disposition may, by this restriction, be deterred from detecting an error or controverting a train of false reasoning, but the loss which might by these means be incurred would be amply re-

paid by the greater authenticity and the greater correctness of our medical publications.

With respect to the second suggestion, the more accurate generalization of facts, when the facts themselves are fully substantiated,—this must be accomplished by the due exercise of judgment and sagacity, and can scarcely be directed by any general rules. I may remark, however, that one obvious mode of attaining this end is to arrange our insulated facts, as much as possible, in the form of statistical tables, by which we may readily observe their connection with or relation to each other, and may thus be prevented from forming a hasty or unauthorized conclusion, derived merely from single cases or individual observations.

Another important means of obtaining the object in view is to preserve great precision in the use of technical and scientific terms. How many controversies have occupied the mind for ages, and have filled almost innumerable volumes, which have essentially turned upon the definition of a word? How frequently have remedies been prescribed, not for the symptoms, but for the name of a disease? How frequently has an article of the *materia medica* been employed, not from an experience of its actual effects, but from some nominal property assigned to it by an imperfect analogy or imaginary quality? The means that have been proposed to check these aberrations, to rectify the above-mentioned errors, and to reduce medical science to its appropriate and correct limits, are indeed few and simple, and not of difficult application. But there is one essential requisite, without which they can be of no avail,—a mind disposed to the reception of truth, determined to follow it wherever it may lead the inquirer, united to a high sense of moral obligation, which may induce the medical practitioner to bear in mind that his profession is a deposit placed in his hands for the benefit of mankind, and that he incurs an awful degree of moral responsibility who abuses this sacred trust, or diverts it to a base or selfish purpose.

THE END.



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