Title: Encyclopaedia Britannica, 11th Edition, "Harmony" to "Heanor"

Author: Various

Release date: May 5, 2012 [EBook #39632]

Language: English

Credits: Produced by Marius Masi, Don Kretz and the Online
Distributed Proofreading Team at http://www.pgdp.net

Transcriber's note:

A few typographical errors have been corrected. They appear in the text like this, and the explanation will appear when the mouse pointer is moved over the marked passage. Sections in Greek will yield a transliteration when the pointer is moved over them, and words using diacritic characters in the Latin Extended Additional block, which may not display in some fonts or browsers, will display an unaccented version.

Links to other EB articles: Links to articles residing in other EB volumes will be made available when the respective volumes are introduced online.

THE

ENCYCLOPÆDIA BRITANNICA

ELEVENTH EDITION

FIRST	edition,	published in	three	volumes,	1768-1771.
SECOND	”	”	ten	”	1777-1784.
THIRD	”	”	eighteen	”	1788-1797.
FOURTH	”	”	twenty	”	1801-1810.
FIFTH	”	”	twenty	”	1815-1817.
SIXTH	”	”	twenty	”	1823-1824.
SEVENTH	”	”	twenty-one	”	1830-1842.
EIGHTH	”	”	twenty-two	”	1853-1860.
NINTH	”	”	twenty-five	”	1875-1889.
TENTH	”	ninth edition and eleven supplementary volumes,			1902-1903.
ELEVENTH	”	published in twenty-nine volumes,			1910-1911.

THE

ENCYCLOPÆDIA BRITANNICA

A

DICTIONARY

OF

ARTS, SCIENCES, LITERATURE AND GENERAL

INFORMATION

ELEVENTH EDITION

VOLUME XIII

HARMONY to HURSTMONCEAUX

New York

Encyclopædia Britannica, Inc.

342 Madison Avenue

VOLUME XIII SLICE I

Harmony to Heanor

Articles in This Slice

INITIALS USED IN VOLUME XII. TO IDENTIFY INDIVIDUAL CONTRIBUTORS,[1] WITH THE HEADINGS OF THE ARTICLES IN THIS VOLUME SO SIGNED.

A. E. G.*	Rev. Alfred Ernest Garvie, M.A., D.D. Principal of New College, Hampstead. Member of the Board of Theology and the Board of Philosophy, London University. Author of *Studies in the Inner Life of Jesus*, &c.	**Heresy** (*in part*).
A. D.	Henry Austin Dobson, LL.D. See the biographical article, Dobson, H. A.	**Hogarth.**
A. E. T. W.	Alfred Edward Thomas Watson. Editor of the *Badminton Library* and *Badminton Magazine*.	**Horse-Racing** (*in part*);

	Formerly Editor of the *Illustrated Sporting and Dramatic News*. Author of *The Racing World and its Inhabitants*: &c.	**Hunting.**
A. C. S.	Algernon Charles Swinburne. See the biographical article, Swinburne, A. C.	**Hugo, Victor.**
A. Cy.	Arthur Ernest Cowley, M.A., Litt.D. Sub-Librarian of the Bodleian Library, Oxford. Fellow of Magdalen College.	**Hebrew Language; Hebrew Literature.**
A. F. P.	Albert Frederick Pollard, M.A., F.R.Hist.S. Professor of English History in the University of London. Fellow of All Souls College, Oxford. Assistant Editor of the *Dictionary of National Biography*, 1893-1901. Lothian Prizeman (Oxford), 1892, Arnold Prizeman, 1898. Author of *England under the Protector Somerset*; *Henry VIII.*; *Life of Thomas Cranmer*; &c.	**Heath, Nicholas; Henry VIII. of England; Hooper, Bishop; Humphrey, Lawrence.**
A. Go.*	Rev. Alexander Gordon, M.A. Lecturer on Church History in the University of Manchester.	**Hofmann, Melchior; Hotman.**
A. H. S.	Rev. Archibald Henry Sayce, D.D., Litt.D., LL.D. See the biographical article, Sayce, A. H.	**Humboldt, Karl W. Von.**
A. H.-S.	Sir A. Houtum-Schindler, C.I.E. General in the Persian Army. Author of *Eastern Persian Irak*.	**Hormuz** (*in part*).
A. J. H.	Alfred J. Hipkins, F.S.A. (1826-1903). Formerly Member of Council and Hon. Curator of the Royal College of Music, London. Member of Committee of the Inventions and Music Exhibition, 1885; of the Vienna Exhibition, 1892; and of the Paris Exhibition, 1900. Author of *Musical Instruments*; &c.	**Harp** (*in part*).
A. L.	Andrew Lang. See the biographical article, Lang, Andrew.	**Hauntings.**
A. M. C.	Agnes Mary Clerke. See the biographical article, Clerke, A. M.	**Herschel, Sir F. W.** (*in part*); **Herschel, Sir J. F. W.** (*in part*). **Hevelius; Hipparchus; Horrocks; Huggins; Humboldt.**
A. N.	Alfred Newton, F.R.S. See the biographical article, Newton, Alfred.	**Harpy; Harrier; Hawfinch; Hawk; Heron; Hoactzin; Honeyeater; Honey Guide; Hoopoe; Hornbill; Humming-Bird.**
A. Sl.	Arthur Shadwell, M.A., M.D., LL.D., F.R.C.P. Member of Council of Epidemiological Society. Author of *Industrial Efficiency*; *The London Water Supply*; *Drink, Temperance and Legislation*.	**Housing.**
A. W. H.*	Arthur William Holland. Formerly Scholar of St John's College, Oxford. Bacon Scholar of Gray's Inn, 1900.	**Henry IV.:** *Roman Emperor*; **Hide; Hohenzollern; Honorius II.:** *Anti-Pope*.
A. W. W.	Adolphus William Ward, Litt.D., LL.D. See the biographical article, Ward, A. W.	**Hrosvitha.**
C. A. M. F.	Charles Augustus Maude Fennell, M.A., Litt.D. Formerly Fellow of Jesus College, Cambridge. Editor of Pindar's *Odes and Fragments*; and of the *Stanford Dictionary of Anglicised Words and Phrases*.	**Hercules.**
C. B.*	Charles Bémont, Litt.D. (Oxon.). See the biographical article, Bémont, C.	**Havet; Hozier.**
C. El.	Sir Charles Norton Edgcumbe Eliot, K.C.M.G., C.B., M.A., LL.D., D.C.L. Vice-Chancellor of Sheffield University. Formerly Fellow of Trinity College, Oxford. H.M.'s Commissioner and Commander-in-Chief for the British East Africa Protectorate; Agent and Consul-General at Zanzibar; and Consul-General for German East Africa, 1900-1904.	**Hissar** (*in part*); **Hungary:** *Language*; **Huns.**
C. F. A.	Charles Francis Atkinson. Formerly Scholar of Queen's College, Oxford. Captain, 1st City of London (Royal Fusiliers). Author of *The Wilderness and Cold Harbour*.	**Hohenlohe** (*in part*).
C. H. Ha.	Carlton Huntley Hayes, A.M., Ph.D. Assistant Professor of History in Columbia University, New York City. Member of the American Historical Association.	**Honorius II., III., IV.**
C. J. L.	Sir Charles James Lyall, K.C.S.I., C.I.E., LL.D. (Edin.). Secretary Judicial and Public Department, India Office. Fellow of King's College, London. Secretary to Government	**Hindōstānī Literature.**

	of India, Home Department, 1889-1894. Chief Commissioner, Central Provinces, India, 1895-1898. Author of *Translations of Ancient Arabic Poetry*; &c.	
C. L. K.	Charles Lethbridge Kingsford, M.A., F.R.Hist.S., F.S.A. Assistant Secretary to the Board of Education. Author of *Life of Henry V.* Editor of *Chronicles of London*, and Stow's *Survey of London*.	**Henry IV., V., VI.:** *of England*.
C. Mo.	William Cosmo Monkhouse. See the biographical article, Monkhouse, W. C.	**Hunt, W. Holman.**
C. P.	Rev. Charles Pritchard, M.A. See the biographical article, Pritchard, Charles.	**Herschel, Sir F. W.** (*in part*); **Herschel, Sir J. F. W.** (*in part*).
C. Pf.	Christian Peister, D.-ès-L. Professor at the Sorbonne, Paris. Chevalier of the Legion of Honour. Author of *Études sur le règne de Robert le Pieux*.	**Hunald.**
C. R. B.	Charles Raymond Beazley, M.A., D.Litt. Professor of Modern History in the University of Birmingham. Formerly Fellow of Merton College, Oxford, and University Lecturer in the History of Geography. Author of *Henry the Navigator*; *The Dawn of Modern Geography*; &c.	**Hayton; Henry the Navigator.**
C. S.	Carl Schurz, LL.D. See the biographical article, Schurz, Carl.	**Hayes, Rutherford B.**
C. W. W.	Sir Charles William Wilson, K.C.B., K.C.M.G., F.R.S. (1836-1907). Major-General, Royal Engineers. Secretary to the North American Boundary Commission, 1858-1862. British Commissioner on the Servian Boundary Commission. Director-General of the Ordnance Survey, 1886-1894. Director-General of Military Education, 1895-1898. Author of *From Korti to Khartoum*; *Life of Lord Clive*; &c.	**Hierapolis** (*in part*).
D. B. M.	David Binning Monro, M.A., Litt.D. See the biographical article, Monro, David Binning.	**Homer.**
D. F. T.	Donald Francis Tovey. Author of *Essays in Musical Analysis*: comprising *The Classical Concerto*, *The Goldberg Variations*, and analyses of many other classical works.	**Harmony.**
D. Gi.	Sir David Gill, K.C.B., LL.D., F.R.S., F.R.A.S., D.Sc. H.M. Astronomer at Cape of Good Hope, 1879-1907. Served in Geodetic Survey of Egypt, and on the expedition to Ascension Island to determine the Solar Parallax by observations of Mars. Directed Geodetic Survey of Natal, Cape Colony and Rhodesia. Author of *Geodetic Survey of South Africa*; *Catalogues of Stars for the Equinoxes* (1850, 1860, 1885, 1890, 1900); &c.	**Heliometer.**
D. G. H.	David George Hogarth, M.A. Keeper of the Ashmolean Museum, Oxford. Fellow of Magdalen College, Oxford. Fellow of the British Academy. Excavated at Paphos, 1888; Naucratis, 1899 and 1903; Ephesus, 1904-1905; Assiut, 1906-1907. Director, British School at Athens, 1897-1900. Director, Cretan Exploration Fund, 1899.	**Heraclea** (*in part*); **Hierapolis** (*in part*); **Hittites.**
D. H.	David Hannay. Formerly British Vice-Consul at Barcelona. Author of *Short History of the Royal Navy*; *Life of Emilio Castelar*; &c.	**Heyn; Hood, Viscount;** **Howe, Earl; Humour.**
D. Mn.	Rev. Dugald Macfadyen, M.A. Minister of South Grove Congregational Church, Highgate. Author of *Constructive Congregational Ideals*; &c.	**Henderson, Alexander** (*in part*).
D. S.*	David Sharp, M.A., M.B., F.R.S., F.Z.S. Editor of the *Zoological Record*. Formerly Curator of Museum of Zoology, University of Cambridge. President of Entomological Society of London. Author of "Insecta" (*Cambridge Natural History*); &c.	**Hexapoda** (*in part*).
E. C. B.	Rt. Rev. Edward Cuthbert Butler, O.S.B., M.A., D.Litt. Abbot of Downside Abbey, Bath. Author of "The Lausiac History of Palladius" in *Cambridge Texts and Studies*, vol. vi.	**Hieronymites;** **Hilarion, Saint.**
E. D. B.	Edwin Dampier Brickwood. Author of *Boat-Racing*; &c.	**Horse:** *History*; **Horse-Racing** (*in part*).
E. D. Bu.	Edward Dundas Butler. Formerly Assistant in the Department of Printed Books, British Museum. Foreign Member of the Hungarian Academy of Sciences. Author of *Hungarian Poems and Fables for English Readers*; &c.	**Hungary:** *Literature* (*in part*).
E. E. S.	Ernest Edward Sikes, M.A. Fellow, Tutor and Lecturer, St John's College, Cambridge. Newton Student at Athens, 1890. Editor of the *Prometheus*	**Hephaestus;** **Hera; Hermes.**

	Vinctus of Aeschylus, and of *The Homeric Hymns*.	
E. F. S.	Edward Fairbrother Strange. Assistant-Keeper, Victoria and Albert Museum, South Kensington. Member of Council, Japan Society. Author of numerous works on art subjects. Joint-editor of Bell's "Cathedral" Series.	**Hiroshige; Hokusai.**
E. G.	Edmund Gosse, LL.D. See the biographical article, Gosse, Edmund, W.	**Heroic Romances; Heroic Verse; Herrick; Holberg.**
Ed. M.	Eduard Meyer, Ph.D., D.Litt. (Oxon.), LL.D. Professor of Ancient History in the University of Berlin. Author of *Geschichte des Alterthums*; *Geschichte des alten Aegyptens*; *Die Israeliten und ihre Nachbarstämme*.	**Hormizd.**
E. M. W.	Rev. Edward Mewburn Walker, M.A. Fellow, Senior Tutor and Librarian of Queen's College, Oxford.	**Herodotus** (*in part*).
E. O.*	Edmund Owen, M.B., F.R.C.S., LL.D., D.Sc. Consulting Surgeon to St Mary's Hospital, London, and to the Children's Hospital, Great Ormond Street, London. Chevalier of the Legion of Honour. Late Examiner in Surgery at the Universities of Cambridge, London and Durham. Author of *A Manual of Anatomy for Senior Students*.	**Heart:** *Surgery*; **Hernia.**
E. Pr.	Edgar Prestage. Special Lecturer in Portuguese Literature at the University of Manchester. Commendador, Portuguese Order of S. Thiago. Corresponding Member of Lisbon Royal Academy of Sciences and Lisbon Geographical Society.	**Herculano de Carvalho e Araiyo.**
E. Re.*	Emil Reich, Doc.Juris., F.R.Hist.S. Author of *Hungarian Literature*; *History of Civilization*; &c.	**Hungary:** *Literature* (*in part*).
E. R. B.	Edwyn Robert Bevan, M.A. New College, Oxford. Author of *The House of Seleucus*; *Jerusalem under the High Priests*.	**Hellenism.**
F. B.	Felice Barnabei, Litt.D. Formerly Director of Museum of Antiquities at Rome. Author of archaeological papers in Italian reviews and in the *Athenaeum*.	**Herculaneum.**
F. C. C.	Frederick Cornwallis Conybeare, M.A., D.Th. (Giessen). Fellow of the British Academy. Formerly Fellow of University College, Oxford. Author of *The Ancient Armenian Texts of Aristotle*; *Myth, Magic and Morals*; &c.	**Holy Water.**
F. G. M. B.	Frederick George Meeson Beck, M.A. Fellow and Lecturer of Clare College, Cambridge.	**Heruli.**
F. G. P.	Frederick Gymer Parsons, F.R.C.S., F.Z.S., F.R.Anthrop.Inst. Vice-President, Anatomical Society of Great Britain and Ireland. Lecturer on Anatomy at St Thomas's Hospital and the London School of Medicine for Women. Formerly Hunterian Professor at the Royal College of Surgeons.	**Heart:** *Anatomy*.
F. G. S.	F. G. Stephens. Formerly art critic of the *Athenaeum*. Author of *Artists at Home*; *George Cruikshank*; *Memorials of W. Mulready*; *French and Flemish Pictures*; *Sir E. Landseer*; *T. C. Hook, R.A.*; &c.	**Holl, Frank.**
F. H. B.	Francis Henry Butler, M.A. Worcester College, Oxford. Associate of the Royal School of Mines.	**Honey; Hunter, John; Hunter, William.**
F. Ll. G.	Francis Llewellyn Griffith, M.A., Ph.D., F.S.A. Reader in Egyptology, Oxford University. Editor of the Archaeological Survey and Archaeological Reports of the Egypt Exploration Fund. Fellow of Imperial German Archaeological Institute.	**Heliopolis; Hermes Trismegistus; Horus.**
F. O. B.	Frederick Orpen Bower, D.Sc., F.R.S. Regius Professor of Botany in the University of Glasgow. Author of *Practical Botany for Beginners*.	**Hofmeister.**
F. Px.	Frank Puaux. President of the Société de l'Histoire du Protestantisme français. Author of *Les Précurseurs français de la tolérance*; *Histoire de l'établissement des protestants français en Suède*; *L'Église réformée de France*; &c.	**Huguenots.**
G. A. Gr.	George Abraham Grierson, C.I.E., Ph.D., D.Litt. Member of the Indian Civil Service, 1873-1903. In charge of Linguistic Survey of India, 1898-1902. Gold Medallist, Asiatic Society, 1909. Vice-President of the Royal Asiatic Society. Formerly Fellow of Calcutta University. Author of *The Languages of India*; &c.	**Hindōstānī.**

G. C. R.	George Croom Robertson, M.A. See the biographical article, Robertson, G. C.	**Hobbes, Thomas** (*in part*).
G. C. W.	George Charles Williamson, Litt.D. Chevalier of the Legion of Honour. Author of *Portrait Miniatures*; *Life of Richard Cosway*, R.A.; *George Engleheart*; *Portrait Drawings*; &c. Editor of new edition of Bryan's *Dictionary of Printers and Engravers*.	**Hilliard, Lawrence; Hilliard, Nicholas; Hoskins. Humphry, Ozias.**
G. G. S.	George Gregory Smith, M.A. Professor of English Literature, Queen's University of Belfast. Author of The *Days of James IV.*; *The Transition Period*; *Specimens of Middle Scots*; &c.	**Henryson.**
G. E.	Rev. George Edmundson, M.A., F.R.Hist.S. Formerly Fellow and Tutor of Brasenose College, Oxford. Ford's Lecturer, 1909. Hon. Member, Dutch Historical Society, and Foreign Member, Netherlands Association of Literature.	**Holland:** *History*. **Holland:** *County and Province of*.
G. H. C.	George Herbert Carpenter, B.Sc. Professor of Zoology in the Royal College of Science, Dublin. President of the Association of Economic Biologists. Member of the Royal Irish Academy. Author of *Insects: their Structure and Life*; &c.	**Hemiptera; Hexapoda** (*in part*).
G. J. T.	George James Turner. Barrister-at-Law, Lincoln's Inn. Editor of *Select Pleas for the Forests* for the Selden Society.	**Hundred.**
G. K.	Gustav Krüger. Professor of Church History in the University of Giessen. Author of *Das Papsttum*; &c.	**Hippolytus.**
G. R.	Rev. George Rawlinson, M.A. See the biographical article, Rawlinson, George.	**Herodotus** (*in part*).
G. W. T.	Rev. Griffithes Wheeler Thatcher, M.A., B.D. Warden of Camden College, Sydney, N.S.W. Formerly Tutor in Hebrew and Old Testament History at Mansfield College, Oxford.	**Ḥasan-ul-Basrī; Ḥassān ibn Thābit; Ḥishām ibn al-Kalbī.**
H.	Lord Houghton. See the biographical article, Houghton, 1st Baron.	**Hood, Thomas.**
H. Br.	Henry Bradley, M.A., Ph.D. Joint-editor of the *New English Dictionary* (Oxford). Fellow of the British Academy. Author of *The Story of the Goths*; *The Making of English*; &c.	**Heliand.**
H. Bt.	Sir Henry Burdett, K.C.B., K.C.V.O. Founder and Editor of *The Hospital*. Formerly Superintendent of the Queen's Hospital, Birmingham, and the Seamen's Hospital, Greenwich. Author of *Hospitals and Asylums of the World*; &c.	**Hospital.**
H. Ch.	Hugh Chisholm, M.A. Formerly Scholar of Corpus Christi College, Oxford. Editor of the 11th edition of the *Encyclopaedia Britannica*; Co-editor of the 10th edition.	**Howe, Samuel Gridley.**
H. De.	Hippolyte Delehaye, S.J. Assistant in the compilation of the Bollandist publications: *Analecta Bollandiana* and *Acta sanctorum*.	**Helena, St; Hubert, St.**
H. L.	Henri Labrosse. Assistant Librarian at the Bibliothèque Nationale, Paris. Officer of the Academy.	**Hugh of St Cher.**
H. L. C.	Hugh Longbourne Callendar, F.R.S., LL.D. Professor of Physics, Royal College of Science, London. Formerly Professor of Physics in McGill College, Montreal, and in University College, London.	**Heat.**
H. M. V.	Herbert M. Vaughan, F.S.A. Keble College, Oxford. Author of *The Last of the Royal Stuarts*; *The Medici Popes*; *The Last Stuart Queen*.	**Henry, Stuart (Cardinal York).**
H. W. C. D.	Henry William Carless Davis, M.A. Fellow and Tutor of Balliol College, Oxford. Fellow of All Souls College, Oxford, 1895-1902. Author of *England under the Normans and Angevins*; Charlemagne.	**Henry I., II., III.:** *Of England*. **Henry of Huntingdon.**
H. W. R.*	Rev. Henry Wheeler Robinson, M.A. Professor of Church History in Rawdon College, Leeds. Senior Kennicott Scholar, Oxford, 1901. Author of *Hebrew Psychology in Relation to Pauline Anthropology* (in Mansfield College Essays); &c.	**Hosea** (*in part*).
H. W. S.	H. Wickham Steed. Correspondent of *The Times* at Vienna. Correspondent of *The Times* at Rome, 1897-1902.	**Humbert, King.**

H. Y.	Sir Henry Yule, K.C.S.I., C.B. See the biographical article, Yule, Sir H.	**Hormuz** (*in part*); **Hsüan Tsang** (*in part*).
I. A.	Israel Abrahams, M.A. Reader in Talmudic and Rabbinic Literature in the University of Cambridge. Formerly President, Jewish Historical Society of England. Author of *A Short History of Jewish Literature*; *Jewish Life in the Middle Ages*; *Judaism*; &c.	**Hasdai ibn Shaprut;** **Herzl;** **Hirsch, Samson R.**
J. A. C.	Sir Joseph Archer Crowe, K.C.M.G. See the biographical article, Crowe, Sir J. A.	**Hobbema; Holbein.**
J. A. R.	Very Rev. Joseph Armitage Robinson, D.D. Dean of Westminster. Fellow of the British Academy. Hon. Fellow of Christ's College, Cambridge. Formerly Fellow of Christ's College, Cambridge, and Norrisian Professor of Divinity in the University. Author of *Some Thoughts on the Incarnation*; &c.	**Hippolytus, The Canons of.**
J. Bt.	James Bartlett. Lecturer on Construction, Architecture, Sanitation, Quantities, &c., at King's College, London. Member of Society of Architects. Member of Institute of Junior Engineers.	**Heating.**
J. B. T.	Sir John Batty Tuke, M.D., F.R.S. (Edin.), D.Sc., LL.D. President of the Neurological Society of the United Kingdom. Medical Director of New Saughton Hall Asylum, Edinburgh. M.P. for the Universities of Edinburgh and St Andrews, 1900-1910.	**Hippocrates.**
J. Da.	Rev. James Davies, M.A. (1820-1883). Formerly Head Master of Ludlow Grammar School and Prebendary of Hereford Cathedral. Translated classical authors for Bohn's "Classical Library." Author of volumes in Collins's *Ancient Classics for English Readers*.	**Hesiod** (*in part*).
J. E.	H. Julius Eggeling, Ph.D. Professor of Sanskrit and Comparative Philology, University of Edinburgh. Formerly Secretary and Librarian to Royal Asiatic Society.	**Hinduism.**
J. F. F.	John Faithfull Fleet, C.I.E. Commissioner of Central and Southern Divisions of Bombay, 1891-1897. Author of *Inscriptions of the Early Gupta Kings*; &c.	**Hindu Chronology.**
J. F. H. B.	Sir John Francis Harpin Broadbent, Bart., M.A., M.D. Physician to Out-Patients, St Mary's Hospital, London, and to the Hampstead General Hospital. Assistant Physician to the London Fever Hospital. Author of *Heart Disease and Aneurysm*; &c.	**Heart:** *Heart Disease*.
J. G.*	Rev. James Gow, M.A., Litt.D. Head Master of Westminster School. Fellow of King's College, London. Formerly Fellow of Trinity College, Cambridge. Editor of Horace's Odes and Satires. Author of *A Companion to the School Classics*; &c.	**Horace** (*in part*).
J. Ga.	James Gairdner, C.B. See the biographical article, Gairdner, J.	**Henry VII.:** *of England*.
J. G. M.	John Gray McKendrick, M.D., LL.D., F.R.S., F.R.C.P. (Edin.) Emeritus Professor of Physiology at the University of Glasgow. Author of *Life in Motion*; *Life of Helmholtz*; &c.	**Hearing;** **Helmholtz.**
J. G. R.	John George Robertson, M.A., Ph.D. Professor of German at the University of London. Formerly Lecturer on the English Language, Strassburg University. Author of *History of German Literature*; &c.	**Heine** (*in part*); **Hildebrand, Lay of;** **Hoffmann, E. T. W.**
J. Hn.	Jūstūs Hashagen, Ph.D. Privatdozent in Medieval and Modern History, University of Bonn. Author of *Das Rheinland unter der französischen Herrschaft*.	**Hecker, F. F. K.;** **Hertzberg, Count Von;** **Hormayr.**
J. H. A. H.	John Henry Arthur Hart, M.A. Fellow, Theological Lecturer and Librarian, St John's College, Cambridge.	**Herod; Herodians.**
J. H. F.	John Henry Freese, M.A. Formerly Fellow of St John's College, Cambridge.	**Herald; Hesiod** (*in part*).
J. H. Mu.	John Henry Muirhead, M.A., LL.D. Professor of Philosophy in the University of Birmingham. Author of *Elements of Ethics*; *Philosophy and Life*; &c. Editor of *Library of Philosophy*.	**Hegel:** *Hegelianism in England*.
J. H. R.	John Horace Round, M.A., LL.D. (Edin.). Author of *Feudal England*; *Studies in Peerage and Family History*; *Peerage and Pedigree*.	**Hereward.**

J. J. F.	Rev. James J. Fox. St Thomas's College, Brookland, D.C., U.S.A.	**Hecker, I. T.**
J. K. L.	Sir John Knox Laughton, M.A., Litt.D. Professor of Modern History, King's College, London, Secretary of the Navy Records Society. Served in the Baltic, 1854-1855; in China, 1856-1859. Honorary Fellow, Gonville and Caius College, Cambridge. Fellow, King's College, London. Author of *Physical Geography in its Relation to the Prevailing Winds and Currents*; *Studies in Naval History*; *Sea Fights and Adventures*; &c.	**Hood of Avalon.**
J. M. M.	John Malcolm Mitchell. Sometime Scholar of Queen's College, Oxford. Lecturer in Classics, East London College (University of London). Joint-editor of Grote's *History of Greece*.	**Heraclitus;** **Hume, David** (*in part*).
J. P.-B.	James George Joseph Penderel-Brodhurst. Editor of the *Guardian* (London).	**Hepplewhite.**
J. P. Pe.	Rev. John Punnett Peters, Ph.D., D.D. Canon Residentiary, Cathedral of New York. Formerly Professor of Hebrew in the University of Pennsylvania. Director of the University Expedition to Babylonia, 1888-1895. Author of *Nippur, or Explorations and Adventures on the Euphrates*.	**Hillah; Hit.**
J. S. Co.	James Sutherland Cotton, M.A. Editor of *The Imperial Gazetteer of India*. Hon. Secretary of the Egyptian Exploration Fund. Formerly Fellow and Lecturer of Queen's College, Oxford. Author of *India* in the "Citizen" Series; &c.	**Hastings, Warren.**
J. S. F.	John Smith Flett, D.Sc., F.G.S. Petrographer to the Geological Survey. Formerly Lecturer on Petrology in Edinburgh University. Neill Medallist of the Royal Society of Edinburgh. Bigsby Medallist of the Geological Society of London.	**Hornfels.**
J. T. Be.	John T. Bealby. Joint-author of Stanford's *Europe*. Formerly Editor of the *Scottish Geographical Magazine*. Translator of Sven Hedin's *Through Asia, Central Asia and Tibet*; &c.	**Hissar** (*in part*).
J. T. C.	Joseph Thomas Cunningham, M.A., F.Z.S. Lecturer on Zoology at the South-Western Polytechnic, London. Formerly Fellow of University College, Oxford. Assistant Professor of Natural History in the University of Edinburgh and Naturalist to the Marine Biological Association.	**Herring.**
J. T. Mo.	John Torrey Morse, Jr. Author of *The Life and Letters of Oliver Wendell Holmes*.	**Holmes, Oliver Wendell.**
J. T. S.*	James Thomson Shotwell, Ph.D. Professor of History in Columbia University, New York City.	**History.**
J. V.*	Jules Viard. Archivist at the National Archives, Paris. Officer of Public Instruction. Author of *La France sous Philippe VI. de Valois*; &c.	**Hundred Years' War.**
J. V. B.	James Vernon Bartlet, M.A., D.D. (St Andrews). Professor of Church History, Mansfield College, Oxford. Author of *The Apostolic Age*; &c.	**Hebrews, Epistle to the;** **Hermas, Shepherd of.**
J. Ws.	John Weathers, F.R.H.S. Lecturer on Horticulture to the Middlesex County Council. Author of *Practical Guide to Garden Plants*; *French Market Gardening*; &c.	**Hippeastrum; Honeysuckle;** **Horticulture** (*in part*).
J. W.*	James Ward, D.Sc., LL.D. Professor of Mental Philosophy and Logic in the University of Cambridge. Fellow of Trinity College, Cambridge. Fellow of the British Academy. Fellow of the New York Academy of Sciences.	**Herbart.**
J. W. F.	J. Walter Ferrier. Translated *George Eliot and Judaism* from the German of Kaufmann. Author of *Mottiscliffe*.	**Heine** (*in part*).
J. W. Fo.	The Hon. John Watson Foster, A.M., LL.D. Professor of American Diplomatics, George Washington University, Washington, U.S.A. Formerly U.S. Secretary of State. Author of *Diplomatic Memoirs*; &c.	**Harrison, Benjamin.**
K. S.	Kathleen Schlesinger. Editor of *The Portfolio of Musical Archaeology*. Author of *The Instruments of the Orchestra*.	**Harp** (*in part*); **Harp-Lute; Harpsichord;** **Holztrompete;** **Horn; Hurdy-Gurdy.**
L. H. B.	Liberty Hyde Bailey, LL.D.	

	Director of the College of Agriculture, Cornell University. Chairman of Roosevelt Commission on Country Life.	**Horticulture:** *American Calendar* (*in part*).
L. J. S.	Leonard James Spencer, M.A. Assistant in Department of Mineralogy, British Museum. Formerly Scholar of Sidney Sussex College, Cambridge, and Harkness Scholar. Editor of the *Mineralogical Magazine*.	**Harmotome; Hemimorphite; Heulandite; Hornblende; Humite.**
L. W.	Lucien Wolf. Vice-President of the Jewish Historical Society of England. Formerly President of the Society. Joint-editor of the *Bibliotheca Anglo-judaica*.	**Hirsch, Baron.**
M. G.	Moses Gaster, Ph.D. (Leipzig). Chief Rabbi of the Sephardic Communities of England. Vice-President, Zionist Congress, 1898, 1899, 1900. Ilchester Lecturer at Oxford on Slavonic and Byzantine Literature, 1886 and 1891. President, Folk lore Society of England. Vice-President Anglo-Jewish Association. Author of *History of Rumanian Popular Literature*; &c.	**Hasdeu.**
M. Ha.	Marcus Hartog, M.A., D.Sc., F.L.S. Professor of Zoology, University College, Cork. Author of "Protozoa" in *Cambridge Natural History*; and papers for various scientific journals.	**Heliozoa.**
M. H. C.	Montague Hughes Crackanthorpe, K.C., D.C.L. President of the Eugenics Education Society. Honorary Fellow, St John's College, Oxford. Bencher of Lincoln's Inn. Formerly Member of the General Council of the Bar and of the Council of Legal Education, and Standing Counsel to the University of Oxford.	**Herschell, 1st Baron.**
M. N. T.	Marcus Niehbur Tod, M.A. Fellow and Tutor of Oriel College, Oxford. University Lecturer in Epigraphy. Joint-author of *Catalogue of the Sparta Museum*.	**Helots.**
M. O. B. C.	Maximilian Otto Bismarck Caspari. Reader in Ancient History at London University. Lecturer in Greek at Birmingham University, 1905-1908.	**Heraclius.**
M. T. M.	Maxwell T. Masters, M.D., F.R.S. (1833-1907). Formerly Editor of *Gardeners' Chronicle*; and Lecturer on Botany, St George's Hospital, London. Author of *Plant Life*; *Botany for Beginners*; and numerous monographs in botanical works.	**Horticulture** (*in part*).
N. D. M.	Newton Dennison Mereness, A.M., Ph.D. Author of *Maryland as a Proprietary Province*.	**Henry, Patrick;** **Homestead and Exemption Laws.**
O. Ba.	Oswald Barron, F.S.A. Editor of *The Ancestor*, 1902-1905. Hon. Genealogist to Standing Council of the Honourable Society of the Baronetage.	**Heraldry;** **Herbert:** *family*; **Howard:** *family*.
O. Br.	Oscar Briliant.	**Hungary:** *Geography and Statistics*.
O. C. W.	Rev. Owen Charles Whitehouse, M.A., D.D. Christ's College, Cambridge. Professor of Hebrew, Biblical Exegesis and Theology, and Theological Tutor, Cheshunt College, Cambridge.	**Hebrew Religion.**
P. A.	Paul Daniel Alphandéry. Professor of the History of Dogma, École pratique des hautes études, Sorbonne, Paris. Author of *Les Idées morales chez les hétérodoxes Latines au début du XIII^e siècle*.	**Henry of Lausanne;** **Hugh of St Victor;** **Humiliati.**
P. C. M.	Peter Chalmers Mitchell, M.A., F.R.S., F.Z.S., D.Sc., LL.D. Secretary to the Zoological Society of London. University Demonstrator in Comparative Anatomy and Assistant to Linacre Professor at Oxford, 1888-1891. Examiner in Zoology to the University of London, 1903. Author of *Outlines of Biology*; &c.	**Hemichorda;** **Heredity.**
P. C. Y.	Philip Chesney Yorke, M.A. Magdalen College, Oxford. Editor of *Letters of Princess Elizabeth of England*.	**Holles, Baron.**
P. H.	Peter Henderson (1823-1890). Formerly Horticulturist, Jersey City and New York. Author of *Gardening for Profit*; *Garden and Farm Topics*.	**Horticulture:** *American Calendar* (*in part*).
P. H. P.-S.	Philip Henry Pye-Smith, M.D., F.R.S. Consulting Physician to Guy's Hospital, London. Formerly Vice-Chancellor of the University of London. Joint-author of *A Text Book of Medicine*; &c.	**Harvey, William.**
P. La.	Philip Lake, M.A., F.G.S.	

	Lecturer on Physical and Regional Geography in Cambridge University. Formerly of the Geological Survey of India. Author of *Monograph of British Cambrian Trilobites*. Translator and Editor of Kayser's *Comparative Geology*.	**Himalaya:** *Geology*.
R. A.*	Robert Anchel. Archivist to the Department de l'Eure.	**Herault de Séchelles.**
R. Ad.	Robert Adamson, LL.D. See the biographical article, Adamson, R.	**Hume, David** (*in part*).
R. A. S. M.	Robert Alexander Stewart Macalister, M.A., F.S.A. St John's College, Cambridge. Director of Excavations for the Palestine Exploration Fund.	**Hebron; Hor, Mt.**
R. A. W.	Robert Alexander Wahab, C.B., C.M.G., C.I.E. Colonel, Royal Engineers. Formerly H.M. Commissioner, Aden Boundary Delimitation, and Superintendent, Survey of India. Served with Tirah Expeditionary Force, 1897-1898; Anglo-Russian Boundary Commission, Pamirs, 1895; &c.	**Hasa, El; Hejaz.**
R. H. S.	Richard Henry Stoddard. See the biographical article, Stoddard, Richard Henry.	**Hawthorne, Nathaniel.**
R. I. P.	Reginald Innes Pocock, F.Z.S. Superintendent of the Zoological Gardens, London.	**Harvester; Hibernation.**
R. J. M.	Ronald John McNeill, M.A. Christ Church, Oxford. Barrister-at-Law. Formerly Editor of the *St James's Gazette*, London.	**Hely-Hutchinson.**
R. J. S.	Hon. Robert John Strutt, M.A., F.R.S. Professor of Physics in the Imperial College of Science and Technology, South Kensington. Fellow of Trinity College, Cambridge.	**Helium.**
R. K. D.	Sir Robert Kennaway Douglas. Formerly Keeper of Oriental Printed Books and MSS. at the British Museum, and Professor of Chinese, King's College, London. Author of *The Language and Literature of China*; &c.	**Hsüan Tsang** (*in part*).
R. L.*	Richard Lydekker, F.R.S., F.G.S., F.Z.S. Member of the Staff of the Geological Survey of India, 1874-1882. Author of *Catalogue of Fossil Mammals, Reptiles and Birds in the British Museum*; *The Deer of all Lands*; *The Game Animals of Africa*; &c.	**Hedgehog; Hippopotamus; Horse** (*in part*); **Howler.**
R. N. B.	Robert Nisbet Bain (d. 1909). Assistant Librarian, British Museum, 1883-1909. Author of *Scandinavia, the Political History of Denmark, Norway and Sweden, 1513-1900*; *The First Romanovs 1613-1725*; *Slavonic Europe, the Political History of Poland and Russia from 1469 to 1796*; &c.	**Höpken; Horn, A. B., Count; Hungary:** *History* (*in part*); **Hunyadi, János; Hunyadi, László.**
R. Po.	René Poupardin, D.-ès-L. Secretary of the École des Chartes. Honorary Librarian at the Bibliothèque Nationale, Paris. Author of *Le Royaume de Provence sous les Carolingiens*; *Recueil des chartes de Saint-Germain*; &c.	**Hinemar.**
R. P. S.	R. Phené Spiers, F.S.A., F.R.I.B.A. Formerly Master of the Architectural School, Royal Academy, London. Past President of Architectural Association. Associate and Fellow of King's College, London. Corresponding Member of the Institute of France. Editor of *Fergusson's History of Architecture*. Author of *Architecture: East and West*; &c.	**House.**
R. S. C.	Robert Seymour Conway, M.A., D.Litt. (Cantab.). Professor of Latin and Indo-European Philology in the University of Manchester. Formerly Professor of Latin in University College, Cardiff; and Fellow of Gonville and Caius College, Cambridge. Author of *The Italic Dialects*.	**Hernici; Hirpini.**
R. S. T.	Ralph Stockman Tarr. Professor of Physical Geography, Cornell University.	**Hudson River.**
R. W.	Robert Wallace, F.R.S. (Edin.), F.L.S. Professor of Agriculture and Rural Economy at Edinburgh University, and Garton. Lecturer on Colonial and Indian Agriculture. Professor of Agriculture, R.A.C., Cirencester, 1882-1885. Author of *Farm Live Stock of Great Britain*; *The Agriculture and Rural Economy of Australia and New Zealand*; *Farming Industries of Cape Colony*; &c.	**Horse** (*in part*).
S. F. B.	Spencer Fullerton Baird, LL.D. See the biographical article, Baird, S. F.	**Henry, Joseph.**
S. A. C.	Stanley Arthur Cook, M.A. Lecturer in Hebrew and Syriac, and formerly Fellow, Gonville and Caius College, Cambridge. Editor for Palestine	

	Exploration Fund. Examiner in Hebrew and Aramaic, London University, 1904-1908. Author of *Glossary of Aramaic Inscriptions*; *The Laws of Moses and the Code of Hammurabi*; *Critical Notes on Old Testament History*; *Religion of Ancient Palestine*; &c.	**Hezekiah;** **Hoshea.**
T. A. I.	Thomas Allan Ingram, M.A., LL.D. Trinity College, Dublin.	**Holiday.**
T. As.	Thomas Ashby, M.A., D.Litt. (Oxon.). Director of British School of Archaeology at Rome. Formerly Scholar of Christ Church, Oxford. Craven Fellow, 1897. Conington Prizeman, 1906. Member of the Imperial German Archaeological Institute.	**Heraclea** (*in part*); **Hispellum.**
T. Ba.	Sir Thomas Barclay, M.P. Member of the Institute of International Law. Member of the Supreme Council of the Congo Free State. Officer of the Legion of Honour. Author of *Problems of International Practice and Diplomacy*; &c. M.P. for Blackburn, 1910.	**High Seas.**
T. B.*	Thomas Brown. Incorporated Weaving, Dyeing and Printing College, Glasgow.	**Hosiery.**
T. F. H.	T. F. Henderson. Author of *The Casket Letters and Mary Queen of Scots*; *Life of Robert Burns*; &c.	**Hooker, Richard.**
T. Gi.	Thomas Gilray, M.A. Formerly Professor of Modern History and English Literature, University College, Dundee.	**Henderson, Alexander** (*in part*).
T. H. H.*	Colonel Sir Thomas Hungerford Holdich, K.C.M.G., K.C.I.E., Hon. D.Sc. Superintendent Frontier Surveys, India, 1892-1898. Gold Medallist, R.G.S., London, 1887. Author of *The Indian Borderland*; *The Countries of the King's Award*; *India*; *Tibet*; &c.	**Helmund; Herat;** **Himalaya;** **Hindu Kush.**
T. L. H.	Sir Thomas Little Heath, K.C.B., D.Sc. Assistant Secretary to the Treasury. Formerly Fellow of Trinity College, Cambridge.	**Hero of Alexandria.**
T. Se.	Thomas Seccombe, M.A. Balliol College, Oxford. Lecturer in History, East London and Birkbeck Colleges, University of London. Stanhope Prizeman, Oxford, 1887. Assistant Editor of *Dictionary of National Biography*, 1891-1901. Author of *The Age of Johnson*; joint-author of *Bookman History of English Literature*; &c.	**Hayward, Abraham;** **Hughes, Thomas.**
T. Wo.	Thomas Woodhouse. Head of the Weaving and Textile Designing Department, Technical College, Dundee.	**Hose-Pipe.**
T. W. A.	Thomas William Allen, M.A. Fellow and Tutor of Queen's College, Oxford. Joint-editor of *The Homeric Hymns*.	**Homer** (*in part*).
W. A. B. C	Rev. William Augustus Brevoort Coolidge, M.A., F.R.G.S., Ph.D. Fellow of Magdalen College, Oxford. Professor of English History, St David's College, Lampeter, 1880-1881. Author of *Guide to Switzerland*; *The Alps in Nature and in History*; &c. Editor of *The Alpine Journal*, 1880-1889.	**Hautes Alpes;** **Haute-Savoie;** **Herzog, Hans.**
W. A. P.	Walter Alison Phillips, M.A. Formerly Exhibitioner of Merton College and Senior Scholar of St John's College, Oxford. Author of *Modern Europe*; &c.	**Hohenlohe** (*in part*). **Holy Alliance, The;** **Honorius I.;** **Hungary:** *History* (*in part*).
W. Ba.	William Bacher, D.Ph. Professor of Biblical Studies at the Rabbinical Seminary, Budapest.	**Hillel.**
W. Fr.	William Fream, LL.D. (d. 1907). Formerly Lecturer on Agricultural Entomology, University of Edinburgh, and Agricultural Correspondent of *The Times*.	**Hop;** **Horse** (*in part*).
W. F. C	William Feilden Craies, M.A. Barrister-at-Law, Inner Temple. Lecturer on Criminal Law at King's College, London. Editor of *Archbold's Criminal Pleading* (23rd ed.).	**Homicide.**
W. G. H.	Walter George Headlam (1866-1908). Fellow of King's College, Cambridge. Editor of Herodas. Translator of the plays of Aeschylus.	**Herodas.**
W. H. F.	Sir William Henry Flower, F.R.S. See the biographical article, Flower, Sir W. H.	**Horse** (*in part*).
W. H. Ha.	William Henry Hadow, M.A., Mus.Doc.	

	Principal, Armstrong College, Newcastle-on-Tyne. Formerly Fellow and Tutor of Worcester College, Oxford. Member of Council, Royal College of Music. Editor of *Oxford History of Music*. Author of *Studies in Modern Music*; &c.	**Haydn.**
W. L. G.	William Lawson Grant, M.A. Professor at Queen's University, Kingston, Canada. Formerly Beit Lecturer in Colonial History at Oxford University. Editor of *Acts of the Privy Council*, Colonial Series; *Canadian Constitutional Development* (in collaboration).	**Howe, Joseph.**
W. M. R.	William Michael Rossetti. See the biographical article, Rossetti, Dante Gabriel.	**Haydon, Benjamin Robert.**
W. P. J.	William Price James. University College, Oxford. Barrister-at-Law. High Bailiff of County Courts, Cardiff. Author of *Romantic Professions*; &c.	**Henley, W. E.**
W. R. Nl.	Sir William Robertson Nicoll, LL.D. See the biographical article, Nicoll, Sir W. R.	**Harris, Thomas Lake.**
W. R. S.	William Robertson Smith, LL.D. See the biographical article, Smith, William Robertson.	**Hosea** (*in part*).
W. R. S.-R.	William Ralston Shedden-Ralston, M.A. Assistant in the Department of Printed Books, British Museum. Author of *Russian Folk Tales*; &c.	**Hertzen.**
W. R. W.	William Robert Worthington Williams, F.L.S. Superintendent of London County Council Botany Centre. Assistant Lecturer in Botany, Birkbeck College (University of London). Member of the Geologists' Association.	**Horticulture** (*in part*).
W. T. H.	William Tod Helmuth, M.D., LL.D. (d. 1901). Formerly Professor of Surgery and Dean of the Homoeopathic and Medical College and Hospital New York. President of the Collins State Homoeopathic Hospital. Sometime President of the American Institute of Homoeopathy and the New York State Homoeopathic Medical Society. Author of *Treatise on Diphtheria*; *System of Surgery*; &c.	**Homoeopathy.**
W. W.	William Wallace, LL.D. See the biographical article, Wallace, William (1844-1897).	**Hegel** (*in part*).
W. Wr.	Williston Walker, Ph.D., D.D. Professor of Church History, Yale University. Author of *History of the Congregational Churches in the United States*; *The Reformation*; *John Calvin*; &c.	**Hopkins, Samuel.**
W. Y. S.	William Young Sellar, LL.D. See the biographical article, Sellar, W. Y.	**Horace** (*in part*).

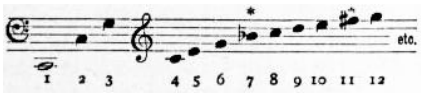
1 A complete list, showing all individual contributors, appears in the final volume.

PRINCIPAL UNSIGNED ARTICLES

Harrow.
Hartford.
Hartlepool.
Harvard University.
Harz Mountains.
Hat.
Havana.
Hawaii.
Hazel.
Health.
Heath.
Hebrides, The.
Heidelberg Catechism.
Heligoland.
Heliostat.
Hellebore.
Helmet.
Hemp.
Herbarium.
Herefordshire.
Hero.
Hertfordshire.
Hesse.
Hesse-Cassel.
Hesse-Darmstadt.
High Place.
Highway.
Hockey.
Holly.
Homily.
Honduras.
Hong-Kong.
Hostage.
Hottentots.
Household, Royal.
Hudson's Bay Company.
Huntingdonshire.

HARMONY (Gr. ἁρμονία, a concord of musical sounds, ἁρμόζειν to join; ἁρμονική (sc. τεχνή) meant the science or art of music, μουσική being of wider significance), a combination of parts so that the effect should be aesthetically pleasing. In its earliest sense in English it is applied, in music, to a pleasing combination of musical sounds, but technically it is confined to the science of the combination of sounds of different pitch.

I. *Concord and Discord.*—By means of harmony modern music has attained the dignity of an independent art. In ancient times, as at the present day among nations that have not come under the influence of European music, the harmonic sense was, if not altogether absent, at all events so obscure and undeveloped as to have no organizing power in the art. The formation by the Greeks of a scale substantially the same as that which has received our harmonic system shows a latent harmonic sense, but shows it in a form which positively excludes harmony as an artistic principle. The Greek perception of certain *successions* of sounds as concordant rests on a principle identifiable with the scientific basis of concord in simultaneous sounds. But the Greeks did not conceive of musical simultaneity as consisting of anything but identical sounds; and when they developed the practice of *magadizing—i.e.* singing in octaves—they did so because, while the difference between high and low voices was a source of pleasure, a note and its octave were then, as now, perceived to be in a certain sense identical. We will now start from this fundamental identity of the octave, and with it trace the genesis of other concords and discords; bearing in mind that the history of harmony is the history of artistic instincts and not a series of progressive scientific theories.



Ex. 1.—The notes marked * are out of tune.

The unisonous quality of octaves is easily explained when we examine the “harmonic series” of upper partials (see Sound). Every musical sound, if of a timbre at all rich (and hence pre-eminently the human voice), contains some of these upper partials. Hence, if one voice produce a note which is an upper partial of another note sung at the same time by another voice, the higher voice adds nothing new to the lower but only reinforces what is already there. Moreover, the upper partials of the higher voice will also coincide with some of the lower. Thus, if a note and its octave be sung together, the upper octave is itself No. 2 in the harmonic series of the lower, No. 2 of its own series is No. 4 of the lower, and its No. 3 is No. 6, and so on. The impression of identity thus produced is so strong that we often find among people unacquainted with music a firm conviction that a man is singing in unison with a boy or an instrument when he is really singing in the octave below. And even musical people find a difficulty in realizing more than a certain brightness and richness of single tone when a violinist plays octaves perfectly in tune and with a strong emphasis on the lower notes. Doubling in octaves therefore never was and never will be a process of harmonization.

Now if we take the case of one sound doubling another in the 12th, it will be seen that here, too, no real addition is made by the higher sound to the lower. The 12th is No. 3 of the harmonic series, No. 2 of the higher note will be No. 6 of the lower, No. 3 will be No. 9, and so on. But there is an important difference between the 12th and the octave. However much we alter the octave by transposition into other octaves, we never get anything but unison or octaves. Two notes two octaves apart are just as devoid of harmonic difference as a plain octave or unison. But, when we apply our principle of the identity of the octave to the 12th, we find that the removal of one of the notes by an octave may produce a combination in which there is a distinct harmonic element. If, for example, the lower note is raised by an octave so that the higher note is a fifth from it, No. 3 of the harmonic series of the higher note will not belong to the lower note at all. The 5th is thus a combination of which the two notes are obviously different; and, moreover, the principle of the identity of octaves can now operate in a contrary direction and transfer this positive harmonic value of the 5th to the 12th, so that we regard the 12th as a 5th plus an octave, instead of regarding the 5th as a compressed 12th.[1] At the same time, the relation between the two is quite close enough to give the 5th much of the feeling of harmonic poverty and reduplication that characterizes the octave; and hence when medieval musicians doubled a melody in 5ths and octaves they believed themselves to be doing no more than extending and diversifying the means by which a melody might be sung in unison by different voices. How they came to prefer for this purpose the 4th to the 5th seems puzzling when we consider that the 4th does not appear as a fundamental interval in the harmonic series until that series has passed beyond that part of it that maintains any relation to our musical ideas. But it was of course certain that they obtained the 4th as the inversion of the 5th; and it is at least possible that the singers of lower voices found a peculiar pleasure in singing below higher voices in a position which they felt harmonically as that of a top part. That is to say, a bass, in singing a fourth below a tenor, would take pleasure in doubling in the octave an alto singing normally a 5th above the tenor.[2] This should also, perhaps, be taken in connexion with the fact that the interval of the downward 4th is in melody the earliest that became settled. And it is worth noticing that, in any singing-class where polyphonic music is sung, there is a marked tendency among the more timid members to find their way into their part by a gentle humming which is generally a 4th below the nearest steady singers.

The limited compass of voices soon caused modifications in the medieval parallelisms of 4ths and 5ths, and the introduction of independent ornaments into one or more of the voices increased to an extent which drew attention to other intervals. It was long, however, before the true criterion of concord and discord was attained; and at first the notion of concord was purely acoustic, that is to say, the ear was sensitive only to the difference in roughness and smoothness between combinations in themselves. And even the modern researches of Helmholtz fail to represent classical and modern harmony, in so far as the phenomena of beats are quite independent of the contrapuntal nature of concord and discord which depends upon the melodic intelligibility of the motion of the parts. Beats give rise to a strong physical sense of discord akin to the painfulness of a flickering light (see Sound). Accordingly, in the earliest experiments in harmony, the ear, in the absence of other criteria, attached much more importance to the purely acoustic roughness of beats than our ears under the experience of modern music. This, and the circumstance that the *imperfect* concords[3] (the 3rds and 6ths) long remained out of tune owing to the incompleteness of the Pythagorean system of harmonic ratios, sufficiently explain the medieval treatment of these combinations as discords differing only in degree from the harshness of 2nds and 7ths. In the earliest attempts at really contrapuntal writing (the astonishing 13th and 14th-century motets, in which voices are made to sing different melodies at once, with what seems to modern ears a total disregard of sound and sense) we find that the method consists in a kind of rough-hewing by which the concords of the octave, 5th and 4th are provided at most of the strong accents, while the rest of the harmony is left to take care of itself. As the art advanced the imperfect concords began to be felt as different from the discords; but as their true nature appeared it brought with it such an increased sense of the harmonic poverty of octaves, 5ths and 4ths, as ended in a complete inversion of the earliest rules of harmony.

The harmonic system of the later 15th century, which culminated in the “golden age” of the 16th-century polyphony, may be described as follows: Imagine a flux of simultaneous independent melodies, so ordered as to form an artistic texture based not only on the variety of the melodies themselves, but also upon gradations between points of repose and points in which the roughness of sound is rendered interesting and beautiful by means of the clearness with which the melodic sense in each part indicates the convergence of all towards the next point of repose. The typical point of repose owes its effect not only to the acoustic smoothness of the combination, but to the fact that it actually consists of the essential elements present in the first five notes of the harmonic series. The major 3rd has thus in this scheme asserted itself as a concord, and the fundamental principle of the identity of octaves produces the result that any combination of a bass note with a major 3rd and a perfect 5th above it, at any distance, and with any amount of doubling, may constitute a concord available even as the final point of repose in the whole composition. And by degrees the *major triad*, with its major 3rd, became so familiar that a chord consisting of a bare 5th, with or without an octave, was regarded rather as a skeleton triad without the 3rd than as a concord free from elements of imperfection. Again, the identity of the octave secured for the combination of a note with its minor 3rd and minor 6th a place among concords; because, whether so recognized by early theorists or not, it was certainly felt as an inversion of the major triad. The fact that its bass note is not the fundamental note (and therefore has a series of upper partials not compatible with the higher notes) deprives it of the finality and perfection of the major triad, to which, however, its relationship is too near for it to be felt otherwise than as a concord. This sufficiently explains why the minor 6th ranks as a concord in music, though it is acoustically nearly as rough as the discord of the minor 7th, and considerably rougher than that of the 7th note of the harmonic series, which has not become accepted in our musical system at all.

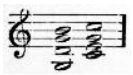
Ex. 2.

Ex. 3.

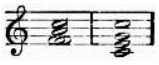
But the major triad and its inversion are not the only concords that will be produced by our flux of melodies. From time to time this flux will arrest attention by producing a combination which, while it does not appeal to the ear as being a part of the harmonic chord of nature, yet contains in itself no elements not already present in the major triad. Theorists have in vain tried to find in “nature” a combination of a note with its minor 3rd and perfect 5th; and so long as harmony was treated unhistorically and unscientifically as an a priori theory in which every chord must needs have a “root,” the minor triad, together with nearly every other harmonic principle of any complexity, remained a mystery. But the minor triad, as an artistic and not purely acoustic phenomenon, is an inevitable thing. It has the character of a concord because of our intellectual perception that it contains the same elements as the major triad; but its absence of connexion with the natural harmonic series deprives it of complete finality in the simple system of 16th-century harmony, and at the same time gives it a permanent contrast with the major triad; a contrast which is acoustically intensified by the fact that, though its intervals are in themselves as concordant as those of the major triad, their relative position produces decidedly rough combinations of “resultant tones.”

By the time our flux of melodies had come to include the major and minor triads as concords, the notion of the independence of parts had become of such paramount importance as totally to revolutionize the medieval conception of the perfect concords. Fifths and octaves no longer formed an oasis in a desert of cacophony, but they assumed the character of concord so nearly approaching to unison that a pair of consecutive 5ths or octaves began to be increasingly felt as violating the independence of the parts. And thus it came about that in pure 16th-century counterpoint (as indeed at the present day whenever harmony and counterpoint are employed in their purest significance) consecutive 5ths and octaves are strictly forbidden. When we compare our laws of counterpoint with those of medieval discant (in which consecutive 5ths and octaves are the rule, while consecutive 3rds and 6ths are strictly forbidden) we are sometimes tempted to think that the very nature of the human ear has changed. But it is now generally recognized that the process was throughout natural and inevitable, and the above account aims at showing that consecutive 5ths are forbidden by our harmonic system for the very reason which inculcated them in the system of the 12th century.

II. *Tonality.*—As soon as the major and minor triad and their first inversions were well-defined entities, it became evident that the successions of these concords and their alternations with discord involved principles at once larger and more subtle than those of mere difference in smoothness and artificiality. Not only was a major chord (or at least its skeleton) necessary for the final point of repose in a composition, but it could not itself sound final unless the concords as well as the discords before it showed a well-defined tendency towards it. This tendency was best realized when the penultimate concord had its fundamental note at the distance of a 5th or a 4th above or below that of the final chord. When the fundamental note of the penultimate chord is a 5th above or (what is the same thing) a 4th below that of the final chord, we have an “authentic” or “perfect” cadence, and the relation between the two chords is very clear. While the contrast between them is well marked, they have one note in common—for the root of the penultimate chord is the 5th of the final chord; and the statement of this common note, first as an octave or unison and then as a 5th, expresses the first facts of harmony with a force which the major 3rds of the chords can only strengthen, while it also involves in the bass that melodic interval of the 4th or the 5th which is now known to be the germ of all melodic scales. The relation of the final note of a scale with its upper 5th or lower 4th thus becomes a fundamental fact of complex harmonic significance—that is to say, of harmony modified by melody in so far as it concerns the succession of sounds as well as their simultaneous combination. In our modern key-system the final note of the scale is called the *tonic*, and the 5th above or 4th below it is the *dominant*. (In the 16th century the term “dominant” has this meaning only in the “authentic” modes other than the Phrygian, but as an aesthetic fact it is present in all music, though the theory here given would not have been intelligible to any composers before the 18th century). Another penultimate chord asserts itself as the converse of the dominant—namely, the chord of which the root is a 5th below or a 4th above the final. This chord has not that relationship to the final which the dominant chord shows, for its fundamental note is not in the harmonic series of the final. But the fundamental note of the final chord is in its harmonic series, and in fact stands to it as the dominant stands to the final. Thus the progression from *subdominant*, as it is called, to tonic, or final, forms a full close known as the “plagal cadence,” second only in importance to the “perfect” or “authentic cadence.” In our modern key-system these three chords, the tonic, the dominant and the subdominant, form a firm harmonic centre in reference to which all other chords are grouped. The tonic is the final in which everything ultimately resolves: the dominant stands on one side of it as a chord based on the note harmonically most closely related to the tonic, and the subdominant stands on the other side as the converse and opposite of the dominant, weaker than the dominant because not directly derived from the

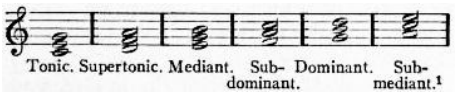


Ex. 4.



Ex. 5.

tonic. The other triads obtainable from the notes of the scale are all minor, and of less importance; and their relationship to each other and to the tonic is most definite when they are so grouped that their basses rise and fall in 4th and 5ths, because they then tend to imitate the relationship between tonic, dominant and subdominant.



Ex. 6.

1 The submediant is so-called because if the subdominant is taken a 5th below the tonic, the submediant will come midway between it and the tonic, as the mediant comes midway between tonic and dominant.

Here are the six common chords of the diatonic scale. The triad on the 7th degree or "leading-note" (B) is a discord, and is therefore not given here.

Now, in the 16th century it was neither necessary nor desirable that chords should be grouped exclusively in this way. The relation between tonic, dominant and subdominant must necessarily appear at the final close, and in a lesser degree at subordinate points of repose; but, where no harmonies were dwelt on as stable and independent entities except the major and minor triads and their first inversions, a scheme in which these were confined to the illustration of their most elementary relationship would be intolerably monotonous. It is therefore neither surprising nor a sign of archaism that the tonality of modal music is from the modern point of view often very indefinite. On the contrary, the distinction between masterpieces and inferior works in the 16th century is nowhere more evident than in the expressive power of modal tonality, alike where it resembles and where it differs from modern. Nor is it too much to say that that expressive power is based on the modern sense of key, and that a description of modal tonality in terms of modern key will accurately represent the harmonic art of Palestrina and the other supreme masters, though it will have almost as little in common with 16th-century theory and inferior 16th-century practice as it has with modern custom. We must conceive modal harmony and tonality as a scheme in which voices move independently and melodiously in a scale capable of bearing the three chords of the tonic, dominant and subdominant, besides three other minor triads, but not under such restrictions of symmetrical rhythm and melodic design as will necessitate a confinement to schemes in which these three cardinal chords occupy a central position. The only stipulation is that the relationship of at least two cardinal chords shall appear at every full close. At other points the character and drift of the harmony is determined by quite a different principle—namely, that, the scale being conceived as indefinitely extended, the voices are agreed in selecting a particular section of it, the position of which determines not only the melodic character of each part but also the harmonic character of the whole, according to its greater or less remoteness from the scale in which major cardinal chords occupy a central position. Historically these modes were derived, with various errors and changes, from the purely melodic modes of the Greeks. Aesthetically they are systems of modern tonality adapted to conditions in which the range of harmony was the smallest possible, and the necessity for what we may conveniently call a clear and solid key-perspective incomparably slighter than that for variety within so narrow a range. We may thus regard modal harmony as an essentially modern scheme, presented to us in cross-sections of various degrees of obliquity, and modified at every close so as either to take us to a point of view in which we see the harmony symmetrically (as in those modes[4] of which the final chord is normally major, namely the Ionian, which is practically our major scale, the Mixolydian and the Lydian, which last is almost invariably turned into Ionian by the systematic flattening of its 4th degree) or else to transform the mode itself so that its own notes are flattened and sharpened into suitable final chords (as is necessary in those modes of which the triad on the final is normally minor, namely, the Dorian, Phrygian and Aeolian). In this way we may describe Mixolydian tonality as a harmonic scheme in which the keys of G major and C major are so combined that sometimes we feel that we are listening to harmony in C major that is disposed to overbalance towards the dominant, and sometimes that we are in G major with a pronounced leaning towards the subdominant. In the Dorian mode our sensations of tonality are more confused. We seem to be wandering through all the key-relationships of a minor tonic without defining anything, until at the final close the harmonies gather strength and bring us, perhaps with poetic surprise, to a close in D with a major chord. In the Phrygian mode the difficulty in forming the final close is such that classical Phrygian compositions actually end in what we feel to be a half-close, an impression which is by the great masters rendered perfectly artistic by the strong feeling that all such parts of the composition as do not owe their expression to the variety and inconstancy of their harmonic drift are on the dominant of A minor.

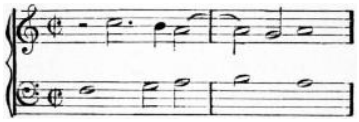
It cannot be too strongly insisted that the expression of modal music is a permanent artistic fact. Its refinements may be crowded out by the later tonality, in which the much greater variety of fixed chords needs a much more rigid harmonic scheme to control it, but they can never be falsified. And when Beethoven in his last "Bagatelle" raises the 6th of a minor scale for the pleasure he takes in an unexpectedly bright major chord; or when, in the *Incarnatus* of his *Mass in D*, he makes a free use of the Dorian scale, he is actuated by precisely the same harmonic and aesthetic motives as those of the wonderful opening of Palestrina's eight-part *Stabat Mater*; just as in the Lydian figured chorale in his *A minor Quartet* he carries out the principle of harmonic variety, as produceable by an oblique melodic scale, with a thoroughness from which Palestrina himself would have shrunk. (We have noted that in 16th-century music the Lydian mode is almost invariably Ionicized.)

III. *Modern Harmony and Tonality.*—In the harmonic system of Palestrina only two kinds of discord are possible, namely, *suspensions* and *passing-notes*. The principle of the suspension is that while parts are moving from one concord to another one of the parts remains behind, so as to create a discord at the moment when the other parts proceed. The suspended part then goes on to its concordant note, which must lie on an adjacent (and in most cases a lower) degree of the scale. Passing-notes are produced transiently by the motion of a part up or down the scale while other parts remain stationary. The possibilities of these two devices can be worked out logically so as to produce combinations of extreme harshness. And, when combined with the rules which laid on the performers the responsibility for modifying the strict scale of the mode in

Ex. 7.
Suspension.

No. 8.
Passing Notes.

order to form satisfactory closes and avoid melodic harshness, they sometimes gave rise to combinations which the clearest artistic intellects of the 16th century perceived as incompatible with the modal style. For example, in a passage written thus the singer of the lower part would be obliged to flatten his B in order to avoid the ugly “tritone” between F and B, while the other singer would be hardly less likely on the spur of the moment to sharpen his G under the impression that he was making a close; and thus one of the most complex and characteristically modern discords, that of the augmented 6th, did frequently occur in 16th-century performances, and was not always regarded as a blunder. But if the technical principles of 16th-century discord left much to the good taste of composers and singers, they nevertheless in conjunction with that good taste severely restricted the resources of harmony; for, whatever the variety and artificiality of the discords admitted by them, they all had this in common, that every discord was transient and could only arise as a phenomenon of delay in the movement of one or more parts smoothly along the scale (“in conjunct motion”) or of a more rapid motion up and down the scale in which none but the rigorously concordant first and last notes received any emphasis. No doubt there were many licenses (such as the “changing-note”) which introduced discords by skip, or on the strong beat without preparation, but these were all as natural as they were illogical. They were artistic as intelligible accidents, precisely like those which make language idiomatic, such as “attraction of the relative” in Greek. But when Monteverde and his fellow monodists tried experiments with unprepared discords, they opened up possibilities far too vast to be organized by them or by the next three generations. We have elsewhere compared the difference between early and modern harmony with that between classical Greek, which is absolutely literal and concrete in expression, and modern English, which is saturated with metaphors and abstractions. We may go further and say that a 16th-century discord, with its preparation and resolution, is, on a very small scale, like a simile, in which both the figure and its interpretation are given, whereas modern discord is like the metaphor, in which the figure is a substitute for and not an addition to the plain statement. It is not surprising that the sudden opening up of the whole possibilities of modern harmony at the end of the 16th century at first produced a chaos of style.



Ex. 9.

Another feature of the harmonic revolution arose from the new habit of supporting a single voice on chords played by an instrument. This, together with the use of discords in a new sense, drew attention to the chords as things in themselves and not as moments of greater or less repose in a flux of independent melodies. This was as valuable an addition to musical thought and expression as the free use of abstract terms is in literature, but it had precisely the same dangers, and has until recent times vitiated harmonic theory and divorced it from the modest observation of the practice of great masters. When, early in the 18th century, Rameau devoted much of his best energy to the elaboration of a theory of harmony, his field of observation was a series of experiments begun in chaos and resolved, not as yet in a great art, but in a system of conventions, for the contemporary art of Bach and Handel was beyond the scope of contemporary theory. He showed great analytical genius and sense of tonality in his development of the notion of the “fundamental bass,” and it is rather to his credit than otherwise that he did not emphasize the distinction between discords on the dominant and those on other degrees of the scale. But his system, with all subsequent improvements, refutations and repairs only led to that bane of 19th-century theory and source of what may be called the journalese of harmonic style, according to which every chord (no matter how obviously artificial and transient) must be regarded, so to speak, as a literal fact for which a root and a scientific connexion with the natural harmonic series must at all cost be found. Some modern theorists have, however, gone too far in denying the existence of harmonic roots altogether, and certainly it is neither scientific nor artistic to regard the coincidence of the major triad with the first five notes of the harmonic series as merely accidental. It is not likely that the dominant 7th owes all its naturalness to a resemblance to the flat 7th of the harmonic series, which is too far out of tune even to pass for an augmented 6th. But the dominant major 9th certainly gains in sonorousness from its coincidence with the 9th harmonic, and many cases in music could be found where the dominant 7th itself would gain from being so far flattened as to add coincidence with a natural harmonic to its musical significance as an unprepared discord (see, for example the “native wood-notes wild” of the distant huntsmen in the second act of *Tristan und Isolde*, where also the 9th and 11th are involved, and, moreover, on horns, of which the natural scale is the harmonic series itself). If the distinction between “essential” and “unessential” discords is, in the light of history and common sense, a difference only in degree, it is thus none the less of great aesthetic importance. Arithmetic and acoustics show that in proportion as musical harmony emphasizes combinations belonging to the lower region of the harmonic series the effect will be sonorous and natural; but common sense, history and aesthetics also show that the interaction of melody, harmony and rhythm must produce a host of combinations which acoustics alone cannot possibly explain. These facts are amply competent to explain themselves. To describe them in detail is beyond the scope of the present article, but a few examples from different periods are given at the end in musical type.

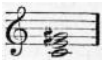
IV. *The Minor Mode.*—When the predecessors of Bach and Handel had succeeded in establishing a key-system able to bear the weight of free discord, that key-system took two forms, in both of which the three chords of tonic, dominant and subdominant occupied cardinal points. In the one form the tonic chord was natural, that is to say, major. In the other form the tonic chord was artificial, that is to say, minor. In the minor mode so firm is the position of the tonic and dominant (the dominant chord always being major) that it is no longer necessary, as in the 16th century, to conclude with a major chord, although it long remained a frequent practice, rather because of the inherent beauty and surprise of the effect than because of any mere survival of ancient customs, at least where great masters are concerned. (This final major chord is known as the *Tierce de Picardie*.) The effect of the minor mode is thus normally plaintive because it centres round the artificial concord instead of the natural; and, though the keynote bears this minor artificial triad, the ear nevertheless has an expectation (which may be intensified into a powerful emotional effect) that the final conclusion of the harmonic scheme may brighten out into the more sonorous harmonic system of major chords. Let us once more recall those ecclesiastical modes of which the 3rd degree is normally minor. We have seen how they may be regarded as the more oblique of the various cross-sections of the 16th-century harmonic scheme. Now, the modern minor mode is too firmly rooted in its minor tonic chord for the 16th-century feeling of an oblique harmonic scheme to be of more than secondary importance, though that feeling survives, as the discussion of key-relationships will show us. But it is constantly thrust into the background by the new possibility that the minor tonic chord with its attendant minor harmonies may give place to the major system round the same tonic, and by the certainty that if any change is made at the conclusion of the work it will be upon the same tonic and not have reference to some other harmonic centre. In other words, a major and minor key on the same tonic are felt as identical in everything but expression (a point in

which the Tonic Sol Fa system, as hitherto practised, with its identification of the minor key with its "relative" instead of its tonic major, shows a most unfortunate confusion of thought). The characteristics of the major and minor modes may of course be modified by many artistic considerations, and it would be as absurd to develop this account into a scheme of pigeon-holed passions as to do the same for the equally obvious and closely parallel fact that in drama a constant source of pathos is the placing of our sympathies in an oblique relation to the natural sequence of events or to the more universal issues of the subject.

V. *Key-Relationships.*—On the modern sense of the identity of the tonic in major and minor rests the whole distinctive character of modern harmony, and the whole key-system of the classical composers. The masters of the 16th century naturally found it necessary to make full closes much more frequently than would be desirable if the only possible close was that on the final of the mode. They therefore formed closes on other notes, but they formed them on these exactly as on a final. Thus, a close on the second degree of the Ionian mode was identical with a Dorian final close. The notes, other than the final, on which closes could be made were called *modulations*. And what between the three "regular modulations" (known as the dominant, mediant, and participant) and the "conceded modulations," of which two were generally admitted in each mode simply in the interests of variety, a composer was at liberty to form a full close on any note which did not involve too many extraneous sharps or flats for its correct accomplishment. But there was a great difference between modal and modern conceptions of modulation. We have said that the close on the second degree of the Ionian mode was Dorian, but such a modulation was not regarded as a visit paid to the Dorian mode, but merely as the formation of a momentary point of repose on the second degree of the Ionian mode. When therefore it is said that the modulations of 16th-century music are "purposeless and shifting," the criticism implies a purpose in change of key which is wholly irrelevant. The modal composers' purpose lay in purely local relationships of harmony, in various degrees of refinement which are often crowded out of the larger and more coarse-grained scheme of modern harmony, but which modern harmony is perfectly capable of employing in precisely the same sense whenever it has leisure.

Modulation, in the modern sense of the term, is a different thing. The modern sense of tonality is so firm, and modern designs so large, that it is desirable that different portions of a composition should be arranged round different harmonic centres or keys, and moreover that the relation between these keys and the primary key should be felt, and the whole design should at last return to the primary key, to remain there with such emphasis and proportion as shall leave upon the mind the impression that the whole is in the primary key and that the foreign keys have been as artistically grouped around it as its own local harmonies. The true principles on which keys are related proved so elastic in the hands of Beethoven that their results utterly outstripped the earlier theory which adhered desperately to the limitations of the 16th century; and so vast is the range of key which Beethoven is able to organize in a convincing scheme of relationship, that even modern theory, dazzled by the true harmonic possibilities, is apt to come to the conclusion, more lame and impotent than any ancient pedantry, that all keys are equally related. A vague conception, dubbed "the unity of the chromatic scale," is thus made to explain away the whole beauty and power of Wagner's no less than Beethoven's harmonic system. We have not space to dispute the matter here, and it must suffice to state dogmatically and statistically the classical facts of key-relationship, including those which Beethoven established as normal possibilities on the suggestion of Haydn, in whose works they appear as special effects.

a. Direct Relationships.—The first principle on which two keys are considered to be related is a strengthening of that which determined the so-called modulations of the 16th-century modes. Two keys are directly related when the tonic chord of the one is among the common chords of the other. Thus, D minor is related to C major because the tonic chord of D minor is the common chord on the supertonic of C (see Ex. 6). In the same way the four other related keys to C major are E minor the mediant, F major the subdominant, G major the dominant and A minor the submediant.


Ex. 10.

This last key-relationship is sometimes called the "relative" minor, partly because it is usually expressed by the same key-signature as the tonic, but probably more justifiably because it is the point of view from which to reckon the key-relationships of the minor tonic. If we take the minor scale in its "harmonic" form (*i.e.* the form deducible from its chords of minor tonic, minor subdominant and major dominant, without regard to the exigencies of melody in concession to which the "melodic" minor scale raises the 6th in ascent and flattens the 7th in descent), we shall find it impossible to build a common chord upon its mediant (Ex. 10). But we have seen that A minor is related to C major; therefore it is absurd to suppose that C major is not related to A minor. Clearly then we must deduce some of the relationships of a minor tonic as the converse of those of a major tonic. Thus we may read Ex. 6 backwards and reason as follows: A minor is the submediant of C major; therefore C major is the mediant or relative major of A minor. D minor is the supertonic of C major; therefore C major is related to D minor and may be called its flat 7th. Taking A minor as our standard key, G major is then the flat 7th to A minor. The remaining major keys (C major to E minor = F major to A minor) may be traced directly as well as conversely; and the subdominant, being minor, does not involve an appeal to the major scale at all. But with the dominant we find the curious fact that while the dominant *chord* of a minor key is major it is impossible to regard the major dominant *key* as directly related to the minor tonic, since it does not contain the minor tonic chord at all; *e.g.* the only chord of A in E major is A major. But the dominant minor key contains the tonic chord of the primary minor key clearly enough as subdominant, and therefore when we modulate from a minor tonic to a minor dominant we feel that we have a direct key-relationship and have not lost touch with our tonic. Thus in the minor mode modulation to the dominant key is, though frequent and necessary, a much more uphill process than in the major mode, because the naturally major dominant chord has first to be contradicted. On the other hand, a contrast between minor tonic and major dominant key is very difficult to work on a large scale (as, for example, in the complementary key for second subjects of sonata movements) because, while the major dominant key behaves as if not directly related to the minor tonic, it also gives a curious sensation of being merely *on* the dominant instead of *in* it; and thus we find that in the few classical examples of a dominant major second subject in a minor sonata-movement the second subject either relapses into the dominant minor, as in Beethoven's *Kreutzer Sonata* and the finale of Brahms's *Third Symphony*, or begins in it, as in the first movement of Brahms's *Fourth Symphony*.

The effect of a modulation to a related key obviously depends upon the change of meaning in the chords common to both keys, and also in the new chords introduced. Thus, in modulating to the dominant we invest the brightest chord of our first key with the finality and importance of a tonic; our original tonic chord becomes comparatively soft in its new position as subdominant; and a new dominant chord arises, surpassing in brilliance the old dominant (now tonic) as that surpassed the primary tonic. Again, in modulating to the subdominant the

softest chord of the primary key becomes tonic, the old tonic is comparatively bright, and a new and softer subdominant chord appears. We have seen the peculiarities of modulation to the dominant from a minor tonic, and it follows from them that modulation from a minor tonic to the subdominant involves the beautiful effect of a momentary conversion of the primary tonic chord to major, the poetic and often dramatically ironical power of which is manifested at the conclusion of more than half the finest classical slow movements in minor keys, from Bach's E♭ minor Prelude in the first book of the *Forty-eight* to the slow movement of Brahms's *G major String Quintet*, Op. 111.

The effect of the remaining key-relationships involves contrasts between major and minor mode; but it is otherwise far less defined, since the primary tonic chord does not occupy a cardinal position in the second key. These key-relationships are most important from a minor tonic, as the change from minor to major is more vivid than the reverse change. The smoothest changes are those to "relative" minor, "relative" major (C to A minor; C minor to E♭); and mediant minor and submediant major (C to E minor; C minor to A♭). The change from major tonic to supertonic minor is extremely natural on a small scale, *i.e.* within the compass of a single melody, as may be seen in countless openings of classical sonatas. But on a large scale the identity of primary dominant with secondary subdominant confuses the harmonic perspective, and accordingly in classical music the supertonic minor appears neither in the second subjects of first movements nor as the key for middle movements.[5] But since the key-relationships of a minor tonic are at once more obscure harmonically and more vivid in contrast, we find that the converse key-relationship of the flat 7th, though somewhat bold and archaic in effect on a small scale, has once or twice been given organic function on a large scale in classical movements of exceptionally fantastic character, of which the three great examples are the ghostly slow movement of Beethoven's *D major Trio, Op. 70*, No. 1, the scherzo of his *Ninth Symphony*, and the finale of Brahms's *D minor Violin Sonata* (where, however, the C major theme soon passes permanently into the more orthodox dominant minor).

Thus far we have the set of key-relationships universally recognized since the major and minor modes were established, a relationship based entirely on the place of the primary tonic chord in the second key. It only remains for us to protest against the orthodox description of the five related keys as being the "relative" minor or major and the dominant and subdominant with their "relative" minors or majors; a conception which expresses the fallacious assumption that keys which are related to the same key are related to one another, and which thereby implies that all keys are equally related and that classical composers were fools. It cannot be too strongly insisted that there is no foundation for key-relationship except through a tonic, and that it is through the tonic that the most distant keys have always been connected by every composer with a wide range of modulation, from Haydn to Brahms and (with due allowance for the conditions of his musical drama) Wagner.

b. Indirect Relationships.—So strong is the identity of the tonic in major and minor mode that Haydn and Mozart had no scruple in annexing, with certain reservations, the key-relationships of either as an addition to those of the other. The smoothness of Mozart's style makes him prefer to annex the key-relationships of the tonic minor (*e.g.* C major to A♭, the submediant of C minor), because the primary tonic note is in the second key, although its chord is transformed. His range of thought does not allow him to use these keys otherwise than episodically; but he certainly does not treat them as chaotically remote by confining them to rapid modulations in the development-portions of his movements. They occur characteristically as beautiful purple patches before or during his second subjects. Haydn, with his mastery of rational paradox, takes every opportunity, in his later works, of using all possible indirect key-relationships in the choice of key for slow movements and for the trios of minuets. By using them thus sectionally (*i.e.* so as not to involve the organic connecting links necessary for the complementary keys of second subjects) he gives himself a free hand; and he rather prefers those keys which are obtained by transforming the minor relationships of a major primary key (*e.g.* C to A major instead of A minor). These relationships are of great brilliance and also of some remoteness of effect, since the primary tonic note, as well as its chord, disappears entirely. Haydn also obtains extreme contrasts by changing both modes (*e.g.* C minor to A major, as in the *G minor Quartet, Op. 72*, No 6, where the slow movement is in E major), and indeed there is not one key-contrast known to Beethoven and Brahms which Haydn does not use with complete sense of its meaning, though his art admits it only as a surprise.

Beethoven rationalized every step in the whole possible range of key-relationship by such harmonic means as are described in the article Beethoven. Haydn's favourite key-relationships he used for the complementary key in first movements; and he at once discovered that the use of the major mediant as complementary key to a major tonic implied at all events just as much suggestion of the submediant major in the recapitulation as would not keep the latter half of the movement for too long out of the tonic. The converse is not the case, and where Beethoven uses the submediant major as complementary key in a major first movement he does not subsequently introduce the still more remote and brilliant mediant in the recapitulation. The function of the complementary key is that of contrast and vividness, so that if the key is to be remote it is as well that it should be brilliant rather than sombre; and accordingly the easier key-relationships obtainable through transforming the tonic into minor do not appear as complementary keys until Beethoven's latest and most subtle works, as the *Quartet in B♭, Op.* 130 (where we again note that the flat submediant of the exposition is temporarily answered by the flat mediant of the recapitulation).

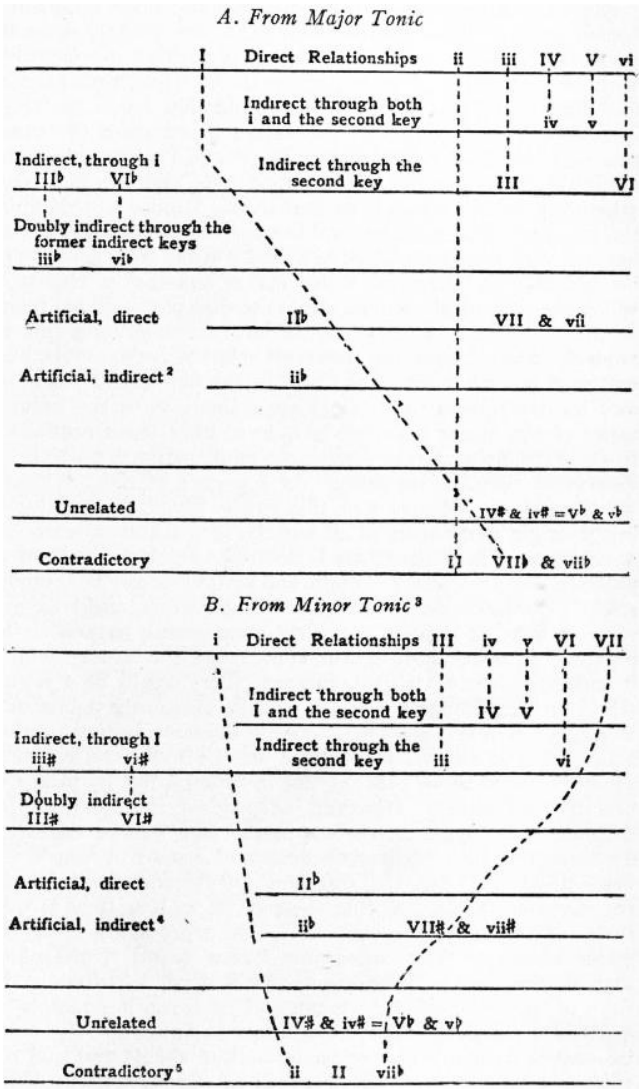
c. Artificial Key-relationships.—Early in the history of the minor mode it was discovered that the lower tetrachord could be very effectively and naturally altered so as to resemble the upper (thus producing the scale C D♭ E♮ F, G A♭ B♮ C). This produces a flat supertonic (the chord of which is generally presented in its first inversion, and is known as the Neapolitan 6th, from its characteristic use in the works of the Neapolitan school which did so much to establish modern tonality) and its origin, as just described, often impels it to resolve on a major tonic chord. Consequently it exists in the minor mode as a phenomenon not much more artificial than the mode itself; and although the keys it thus connects are extremely remote, and the effect of their connexion very surprising, the connexion is none the less real, whether from a major or a minor tonic, and is a crucial test of a composer's sense of key-perspective. Thus Philipp Emanuel Bach in a spirit of mere caprice puts the charming little slow movement of his *D major Symphony* into E♭ and obliterates all real relationship by chaotic operatic connecting links. Haydn's greatest pianoforte sonata (which, being probably his last, is of course No. 1 in most editions) is in E♭, and its slow movement is in F♮ major (= F♭). That key had already appeared, with surprising effect, in the wanderings of the development of the first movement. No attempt is made to indicate its connexion with E♭; and the finale begins in E♭, but its first bar is unharmonized and starts on the one note which most contradicts E♮ and least prepares the mind for E♭. The immediate repetition of the opening phrase a step higher on the normal supertonic strikes the note which the opening had contradicted, and thus shows its function in the

main key without in the least degree explaining away the paradoxical effect of the key of the slow movement. Brahms's *Violoncello Sonata Op.* 99, is in F; a prominent episode in the development of the first movement is in E♯ minor (= G♭), thus preparing the mind for the slow movement, which is in F♯ major (= G♭), with a central episode in F minor. The scherzo is in F minor, and begins on the dominant. Thus if we play its first chord immediately after the last chord of the slow movement we have exactly that extreme position of flat supertonic followed by dominant which is a favourite form of cadence in Wagner, who can even convey its meaning by its mere bass without any harmonies (*Walküre*, Act 3, Scene 2: "Was jetzt du bist, das sage dir selbst").

Converse harmonic relationships are, as we have seen, always weaker than their direct forms. And thus the relation of C major to B major or minor (as shown in the central episode of the slow movement just mentioned) is rare. Still more rare is the obtaining of indirect artificial relationships, of which the episode in the first movement just mentioned is an illustration in so far as it enhances the effect of the slow movement, but is inconclusive in so far as it is episodic. For with remote key-relationships everything depends upon whether they are used with what may be called cardinal function (like complementary keys) or not. Even a near key may occur in the course of wandering modulations without producing any effect of relationship at all, and this should always be borne in mind whenever we accumulate statistics from classical music.

d. Contrary and Unconnected Keys.—There remain only two pairs of keys that classical music has not brought into connexion, a circumstance which has co-operated with the utter vagueness of orthodox theories on the subject to confirm the conventionally progressive critic in his conviction that all modulations are alike. We have seen how the effect of modulation from major tonic to minor supertonic is, on a large scale, obscured by the identity of the primary dominant with the secondary subdominant, though the one chord is major and the other minor. Now when the supertonic becomes major this difference no longer obviates the confusion, and modulation from C major to D major, though extremely easy, is of so bewildering effect that it is used by classical composers only in moments of intensely dramatic surprise, as, for example, in the recapitulation of the first subject of Beethoven's *Eroica Symphony*, and the last variation (or coda) of the slow movement of his *Trio in B♭, Op.* 97. And in both cases the balance is restored by the converse (and equally if not more contradictory) modulation between major tonic and major flat 7th, though in the slow movement of the *B♭ Trio* the latter is represented only by its dominant chord which is "enharmonically" resolved into quite another key. The frequent attempts made by easy-going innovators to treat these key-contrasts on another footing than that of paradox, dramatic surprise or hesitation, only show a deficient sense of tonality, which must also mean an inability to see the intensely powerful effect of the true use of such modulations in classical music, an effect which is entirely independent of any ability to formulate a theory to explain it.[6] There now remains only one pair of keys that have never been related, namely, those that (whether major or minor) are at the distance of a tritone 4th. In the first place they are unrelated because there is no means of putting any form of a tonic chord of F♯ into any form of the key of C, or vice versa; and in the second place because it is impossible to tell which of two precisely opposite keys the second key may be (*e.g.* we have no means of knowing that a direct modulation from C to F♯ is not from C to G♭, which is exactly the same distance in the opposite direction). And this brings us to the only remaining subjects of importance in the science and art of harmony, namely, those of the tempered scale, enharmonic ambiguity and just intonation. Before proceeding we subjoin a table of all the key-relationships from major and minor tonics, representing the degrees by capital Roman figures when the second key is major and small figures when minor. Thus I represents tonic major, iv represents subdominant minor, and so on. A flat or a sharp after the figure indicates that the normal degree of the standard scale has been lowered or raised a semitone, even when in any particular pair of keys it would not be expressed by a flat or a sharp. Thus vi♭ would, from the tonic of B♭ major, express the position of the slow movement of Beethoven's *Sonata, Op.* 106, which is written in F♯ minor since G♭ minor is beyond the practical limits of notation.

TABLES OF KEY-RELATIONSHIPS



2 Very rare, but the slow movement of Schubert's *C major String Quintet* demonstrates it magnificently.

3 All the indirect relationships from a minor tonic are distinctly strained and, except in the violently contrasted doubly indirect keys, obscure as being themselves minor. But the direct artificial modulation is quite smooth, and rich rather than remote. See Beethoven's *C♯ minor Quartet.*

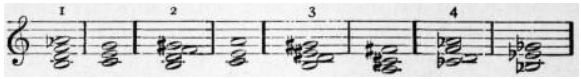
4 No classical example, though the clearer converse from a major tonic occurs effectively.

5 Not (with the exception of II) so violent as when from major tonic. Bach, whose range seldom exceeds direct key-relationships, is not afraid to drift from D minor to C minor, though nothing would induce him to go from D major to C major or minor.

VI. *Temperament and Enharmonic Changes.*—As the facts of artistic harmony increased in complexity and range, the purely acoustic principles which (as Helmholtz has shown) go so far to explain 16th-century aesthetics became more and more inadequate; and grave practical obstacles to euphonious tuning began to assert themselves. The scientific (or natural) ratios of the diatonic scale were not interfered with by art so long as no discords were "fundamental"; but when discords began to assume independence, one and the same note often became assignable on scientific grounds to two slightly different positions in pitch, or at all events to a position incompatible with even tolerable effect in performance. Thus, the chord of the diminished 7th is said to be intolerably harsh in "just intonation," that is to say, intonation based upon the exact ratios of a normal minor scale. In practical performance the diminished 7th contains three minor 3rds and two imperfect 5ths (such as that which is present in the dominant 7th), while the peculiarly dissonant interval from which the chord takes its name is very nearly the same as a major 6th. Now it can only be said that an intonation which makes nonsense of chords of which every classical composer from the time of Corelli has made excellent sense, is a very unjust intonation indeed; and to anybody who realizes the universal relation between art and nature it is obvious that the chord of the diminished 7th must owe its naturalness to its close approximation to the natural ratios of the minor scale, while it owes its artistic possibility to the extremely minute instinctive modification by which its dissonance becomes tolerable. As a matter of fact, although we have shown here and in the article Music how artificial is the origin and nature of all but the very scantiest materials of the musical language, there is no art in which the element of practical compromise is so minute and so hard for any but trained scientific observation to perceive. If a painter could have a scale of light and shade as nearly approaching nature as the practical intonation of music approaches the acoustic facts it really involves, a visit to a picture gallery would be a severe strain on the strongest eyes, as Ruskin constantly points out. Yet music is in this respect exactly on the same footing as other arts. It constitutes no exception to the universal law that artistic ideas must be realized, not in spite of, but by means of practical necessities. However independent the treatment of discords, they assert themselves in the long run as transient. They resolve into permanent points of repose of which the basis is natural; but the transient phenomena float through the harmonic world adapting themselves, as best they can, to their environment, showing as much dependence upon the stable scheme of "just intonation" as a crowd of

metaphors and abstractions in language shows a dependence upon the rules of the syllogism. As much and no more, but that is no doubt a great deal. Yet the attempt to determine the point in modern harmony where just intonation should end and the tempered scale begin, is as vexatious as the attempt to define in etymology the point at which the literal meaning of a word gives places to a metaphorical meaning. And it is as unsound scientifically as the conviction of the typical circle-squarer that he is unravelling a mystery and measuring a quantity hitherto unknown. Just intonation is a reality in so far as it emphasizes the contrast between concord and discord; but when it forbids artistic interaction between harmony and melody it is a chimera. It is sometimes said that Bach, by the example of his forty-eight preludes and fugues in all the major and minor keys, first fixed the modern scale. This is true practically, but not aesthetically. By writing a series of movements in every key of which the keynote was present in the normal organ and harpsichord manuals of his and later times, he enforced the system by which all facts of modern musical harmony are represented on keyed instruments by dividing the octave into twelve equal semitones, instead of tuning a few much-used keys as accurately as possible and sacrificing the euphony of all the rest. This system of *equal temperament*, with twelve equal semitones in the octave, obviously annihilates important distinctions, and in the most used keys it sours the concords and blunts the discords more than unequal temperament; but it is never harsh; and where it does not express harmonic subtleties the ear instinctively supplies the interpretation; as the observing faculty, indeed, always does wherever the resources of art indicate more than they express.

Now it frequently happens that discords or artificial chords are not merely obscure in their intonation, whether ideally or practically, but as produced in practice they are capable of two sharply distinct interpretations. And it is possible for music to take advantage of this and to approach a chord in one significance and quit it with another. Where this happens in just intonation (in so far as that represents a real musical conception) such chords will, so to speak, quiver from one meaning into the other. And even in the tempered scale the ear will interpret the change of meaning as involving a minute difference of intonation. The chord of the diminished 7th has in this way four different meanings—



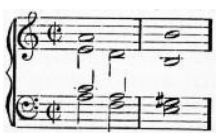
Ex. 11.

and the chord of the augmented 6th, when accompanied by the fifth, may become a dominant 7th or vice versa, as in the passage already cited in the coda of the slow movement of Beethoven's *B♭ Trio, Op.* 97. Such modulations are called *enharmonic*. We have seen that all the more complex musical phenomena involve distinctions enharmonic in the sense of intervals smaller than a semitone, as, for instance, whenever the progression D E in the scale of C, which is a minor tone, is identified with the progression of D E in the scale of D, which is a major tone (differing from the former as $^8/_9$ from $^9/_{10}$). But the special musical meaning of the word "enharmonic" is restricted to the difference between such pairs of sharps with flats or naturals as can be represented on a keyboard by the same note, this difference being the most impressive to the ear in "just intonation" and to the imagination in the tempered scale.

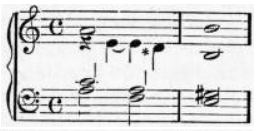
Not every progression of chords which is, so to speak, spelt enharmonically is an enharmonic modulation in itself. Thus a modulation from D flat to E major looks violently enharmonic on paper, as in the first movement of Beethoven's *Sonata, Op.* 110. But E major with four sharps is merely the most convenient way of expressing F flat, a key which would need six flats and a double flat. The reality of an enharmonic modulation can be easily tested by transporting the passage a semitone. Thus, the passage just cited, put a semitone lower, becomes a perfectly diatonic modulation from C to E flat. But no transposition of the sixteen bars before the return of the main theme in the scherzo of Beethoven's *Sonata in E♭, Op.* 31, No. 3, will get rid of the fact that the diminished 7th (G B♭ D♭ E♮), on the dominant of F minor, must have changed into G B♭ D♭ F♭ (although Beethoven does not take the trouble to alter the spelling) before it could resolve, as it does, upon the dominant of A♭. But though there is thus a distinction between real and apparent enharmonic modulations, it frequently happens that a series of modulations perfectly diatonic in themselves returns to the original key by a process which can only be called an enharmonic circle. Thus the whole series of keys now in practical use can be arranged in what is called the circle of fifths (C G D A E B F♯ [= G♭] D♭ A♭ B♭ F C, from which series we now see the meaning of what was said in the discussion of key-relationships as to the ambiguity of the relationships between keys a tritone fourth apart). Now no human memory is capable of distinguishing the difference of pitch between the keys of C and B♯ after a wide series of modulations. The difference would be perceptible enough in immediate juxtaposition, but after some interval of time the memory will certainly accept two keys so near in pitch as identical, whether in "just intonation" or not. And hence the enharmonic circle of fifths is a conception of musical harmony by which infinity is at once rationalized and avoided, just as some modern mathematicians are trying to rationalize the infinity of space by a non-Euclidian space so curved in the fourth dimension as to return upon itself. A similar enharmonic circle progressing in major 3rds is of frequent occurrence and of very rich effect. For example, the keys of the movements of Brahms's *C Minor Symphony* are C minor, E major, A♭ major (= G♯), and C (= B♯). And the same circle occurs in the opposite direction in the first movement of his *Third Symphony*, where the first subject is in F, the transition passes directly to D♭ and thence by exactly the same step to A (= B♭♭). The exposition is repeated, which of course means that in "just intonation" the first subject would begin in G♭♭ and then pass through a transition in E♭♭♭ to the second subject in C♭♭♭. As the development contains another spurious enharmonic modulation, and the recapitulation repeats in another position the first spurious enharmonic modulation of the exposition, it would follow that Brahms's movement began in F and ended in C sextuple-flat! So much, then, for the application of bad metaphysics and circle-squaring mathematics to the art of music. Neither in mathematics nor in art is an approximation to be confused with an imperfection. Brahms's movement begins and ends in F much more exactly than any wooden diagonal fits a wooden square.

The following series of musical illustrations show the genesis of typical harmonic resources of classical and modern music.

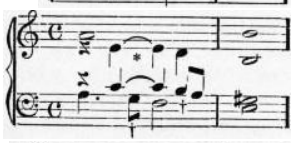
Ex. 12.—Three concords (ionic, first inversion of subdominant, and dominant of A minor, a possible 16th-century cadence in the Phrygian mode).



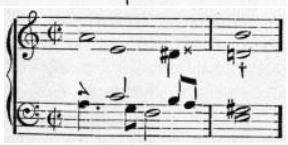
Ex. 13.—The same chords varied by a suspension (*).



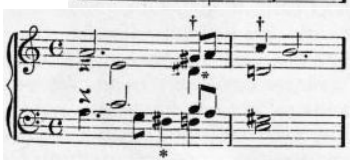
Ex. 14.—Ditto, with the further addition of a double suspension (*) and two passing notes (††).



Ex. 15.—Ditto, with a chromatic alteration of the second chord (*) and an “essential” discord (dominant 7th) at (†).

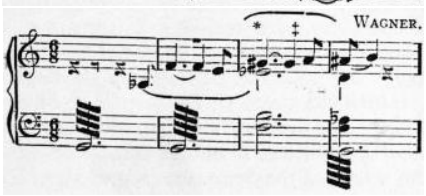


Ex. 16.—Ditto, with chromatic passing notes (**) and appoggiaturas (††).



Ex. 17.—The last two chords of Ex. 16 attacked unexpectedly, the first appoggiatura (*) prolonged till it seems to make a strange foreign chord before it resolves on the short note at ‡, while the second appoggiatura (†) is chromatic.

Ex. 18.—The same enharmonically transformed so as to become a variation of the “dominant ninth” of C minor. The G♯ at * is really A♭, and ‡ is no longer a note of resolution, but a chromatic passing-note.



Definitions.

(Intended to comprise the general conceptions set forth in the above article.)

1. *Musical sounds*, or *notes*, are sensations produced by regular periodical vibrations in the air, sufficiently rapid to coalesce in a single continuous sensation, and not too rapid for the mechanism of the human ear to respond.

2. The *pitch* of a note is the sensation corresponding to the degree of rapidity of its vibrations; being *low* or *grave* where these are slow, and *high* or *acute* where they are rapid.

3. An *interval* is the difference in pitch between two notes.

4. *Rhythm* is the organization, in a musical scheme, of sounds in respect of time.

5. *Melody* is the organization, in a musical scheme, of rhythmic notes in respect of pitch.

6. *Harmony* is the organization, in a musical scheme, of simultaneous combinations of notes on principles whereby their acoustic properties interact with laws of rhythm and melody.

7. The *harmonic series* is an infinite series of notes produced by the subdivision of a vibrating body or column of air into aliquot parts, such notes being generally inaudible except in the form of the timbre which their presence in various proportions imparts to the fundamental note produced by the whole vibrating body or air-column.

8. A *concord* is a combination which, both by its acoustic smoothness and by its logical origin and purpose in a musical scheme, can form a point of repose.

9. A *discord* is a combination in which both its logical origin in a musical scheme and its acoustic roughness show that it cannot form a point of repose.

10. The *perfect concords* and *perfect intervals* are those comprised within the first four members of the harmonic series, namely, the octave, as between numbers 1 and 2 of the series (see Ex. 1 above); the 5th, as between Nos. 2 and 3; and the 4th, as between Nos. 3 and 4.

11. All notes exactly one or more octaves apart are regarded as harmonically identical.

12. The *root* of a chord is that note from which the whole or the most important parts of the chord appear (if distributed in the right octaves) as members of the harmonic series.

13. A chord is inverted when its lowest note is not its root.

14. The *major triad* is a concord containing three different notes which (octaves being disregarded) are identical with the first, third and fifth members of the harmonic series (the second and fourth members being negligible as octaves).

15. The *minor triad* is a concord containing the same intervals as the major triad in a different order; in consequence it is artificial, as one of its notes is not derivable from the harmonic series.

16. *Unessential discords* are those that are treated purely as the phenomena of transition, delay or ornament, in an otherwise concordant harmony.

17. *Essential discords* are those which are so treated that the mind tends to regard them as definite chords possessing roots.

18. A *key* is an harmonic system in which there is never any doubt as to which note or triad shall be the final note of music in that system, nor of the relations between that note or chord and the other notes or chords. (In

this sense the church modes are either not keys or else they are subtle mixtures of keys.)

19. This final note of a key is called its *tonic*.

20. The *major* mode is that of keys in which the tonic triad and the two other cardinal triads are major.

21. The *minor* mode is that of keys in which the tonic triad and one other cardinal triad are minor.

22. A *diatonic scale* is a series of the notes essential to one major or minor key, arranged in order of pitch and repeating itself in other octaves on reaching the limit of an octave.

23. *Modulation* is the passing from one key to another.

24. *Chromatic* notes and chords are those which do not belong to the diatonic scale of the passage in which they occur, but which are not so used as to cause modulation.

25. *Enharmonic* intervals are minute intervals which never occur in music as directly measured quantities, though they exist as differences between approximately equal ordinary intervals, diatonic or chromatic. In an enharmonic modulation, two chords differing by an enharmonic quantity are treated as identical.

26. *Pedal* or *organ point* is the sustaining of a single note in the bass (or, in the case of an *inverted pedal*, in an upper part) while the harmonies move independently. Unless the harmonies are sometimes foreign to the sustained note, it does not constitute a pedal. In modern music pedals take place on either the tonic or the dominant, other pedal-notes being rare and of complex meaning. Double pedals (of tonic and dominant, with tonic below) are not unusual. The device is capable of very free treatment, and has produced many very bold and rich harmonic effects in music since the earlier works of Beethoven. It probably accounts for many so-called “essential discords.”

In the form of *drones* the pedal is the only real harmonic device of ancient and primitive music. The ancient Greeks sometimes used a reiterated instrumental note as an accompaniment *above* the melody. These primitive devices, though harmonic in the true modern sense of the word, are out of the line of harmonic development, and did not help it in any definite way.

27. The *fundamental bass* of a harmonic passage is an imaginary bass consisting of the roots of the chords.

28. A *figured bass*, or *continuo*, is the bass of a composition supplied with numerals indicating the chords to be filled in by the accompanist. *Thorough-bass* (Ger. *Generalbass*) is the art of interpreting such figures.

(D. F. T.)

---

1 Musical intervals are reckoned numerically upwards along the degrees of the diatonic scales (described below). Intervals greater than an octave are called compound, and are referred to their simple forms, *e.g.* the 12th is a compound 5th.

2 It is at least probable that this is one of the several rather obscure reasons for the peculiar instability of the 4th in modern harmony, which is not yet satisfactorily explained.

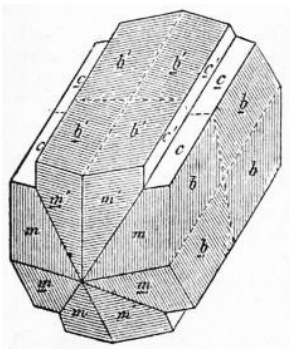
3 The perfect concords are the octave, unison, 5th and 4th. Other diatonic combinations, whether concords or discords, are called imperfect.

4 See Plain Song.

5 Until Beethoven developed the resources for a wider scheme of key-contrasts, the only keys for second subjects of sonata-movements were the dominant (when the tonic was major) and the “relative” major or dominant minor (when the tonic was minor). A wider range was possible only in the irresponsible style of D. Scarlatti.

6 Many theorists mistake the usual extreme emphasis on the dominant chord of the dominant key, in preparation for second subjects, for a modulation to the major supertonic, but this can deceive no one with any sense of tonality. A good practical test is to see what becomes of such passages when translated into the minor mode. Illusory modulation to the flat 7th frequently occurs as a bold method of throwing strong emphasis on to the subdominant at the outset of a movement, as in Beethoven’s *Sonata, Op. 31*, No. 1.

HARMOTOME, a mineral of the zeolite group, consisting of hydrous barium and aluminium silicate, $H_2BaAl_2(SiO_3)_5 + 5H_2O$. Usually a small amount of potassium is present replacing part of the barium. The system of crystallization is monoclinic; only complex twinned crystals are known. A common and characteristic form of twinned crystal, such as is represented in the figure, consists of four intercrossing individuals twinned together according to two twin-laws; the compound group resembles a tetragonal crystal with prism and pyramid, but may be distinguished from this by the grooves along the edges of the pseudo-prism. The faces of the crystals are marked by characteristic striations, as indicated in the figure. Twinned crystals of exactly the same kind are also frequent in phillipsite (*q.v.*). Crystals are usually white and translucent, with a vitreous lustre. The hardness is 4½, and the specific gravity 2.5.



The name harmotome (from ἁρμός, “a joint,” and τέμνειν, “to cut”) was given by R. J. Haüy in 1801, and has a crystallographic signification. Earlier names are cross-stone (Ger. *Kreuzstein*), ercinite, andreasbergolite and andreolite, the two last being derived from the locality, Andreasberg in the Harz. Morvenite (from Morven in Argyllshire) is the name given to small transparent crystals formerly referred to as phillipsite.

Like other zeolites, harmotome occurs with calcite in the amygdaloidal cavities of volcanic rocks, for example, in the dolerites of Dumbartonshire, and as fine crystals in the agate-lined cavities in the melaphyre of Oberstein in Germany. It also occurs in gneiss, and sometimes in metalliferous veins. At Andreasberg in the Harz it is found in the lead and silver veins; and at Strontian in Argyllshire in lead veins, associated with brewsterite (a strontium and barium zeolite), barytes and calcite.

(L. J. S.)

HARMS, CLAUS (1778-1855), German divine, was born at Fahrstedt in Schleswig-Holstein on the 25th of May 1778, and in his youth worked in his father's mill. At the university of Kiel he repudiated the prevailing rationalism and under the influence of Schleiermacher became a fervent Evangelical preacher, first at Lunden (1806), and then at Kiel (1816). His trenchant style made him very popular, and he did great service for his cause especially in 1817, when, on the 300th anniversary of the Reformation, he published side by side with Luther's theses, ninety-five of his own, attacking reason as "the pope of our time" who "dismisses Christ from the altar and throws God's word from the pulpit." He also had some fame as a hymn-writer, and besides volumes of sermons published a good book on *Pastoraltheologie* (1830). He resigned his pastorate on account of blindness in 1849, and died on the 1st of February 1855.

See *Autobiography* (2nd ed., Kiel, 1852); M. Baumgarten, *Ein Denkmal für C. Harms* (Brunswick, 1855).

HARNACK, ADOLF (1851-), German theologian, was born on the 7th of May 1851 at Dorpat, in Russia, where his father, Theodosius Harnack (1817-1889), held a professorship of pastoral theology.

Theodosius Harnack was a staunch Lutheran and a prolific writer on theological subjects; his chief field of work was practical theology, and his important book on that subject, summing up his long experience and teaching, appeared at Erlangen (1877-1878, 2 vols.). The liturgy of the Lutheran church of Russia has, since 1898, been based on his *Liturgische Formulare* (1872).

The son pursued his studies at Dorpat (1869-1872) and at Leipzig, where he took his degree; and soon afterwards (1874) began lecturing as a *Privatdozent*. These lectures, which dealt with such special subjects as Gnosticism and the Apocalypse, attracted considerable attention, and in 1876 he was appointed professor extraordinarius. In the same year he began the publication, in conjunction with O. L. von Gebhardt and T. Zahn, of an edition of the works of the Apostolic Fathers, *Patrum apostolicorum opera*, a smaller edition of which appeared in 1877. Three years later he was called to Giessen as professor ordinarius of church history. There he collaborated with Oscar Leopold von Gebhardt in *Texte und Untersuchungen zur Geschithte der altchristlichen Litteratur* (1882 sqq.), an irregular periodical, containing only essays in New Testament and patristic fields. In 1881 he published a work on monasticism, *Das Mönchtum, seine Ideale und seine Geschichte* (5th ed., 1900; English translation, 1901), and became joint-editor with Emil Schürer of the *Theologische Literaturzeitung*. In 1885 he published the first volume of his epoch-making work, *Lehrbuch der Dogmengeschichte* (3rd ed. in three volumes, 1894-1898; English translation in seven volumes, 1894-1899). In this work Harnack traces the rise of dogma, by which he understands the authoritative doctrinal system of the 4th century and its development down to the Reformation. He considers that in its earliest origins Christian faith and the methods of Greek thought were so closely intermingled that much that is not essential to Christianity found its way into the resultant system. Therefore Protestants are not only free, but bound, to criticize it; indeed, for a Protestant Christian, dogma cannot be said to exist. An abridgment of this appeared in 1889 with the title *Grundriss der Dogmengeschichte* (3rd ed., 1898). In 1886 Harnack was called to Marburg; and in 1888, in spite of violent opposition from the conservative section of the church authorities, to Berlin. In 1890 he became a member of the Academy of Sciences. At Berlin, somewhat against his will, he was drawn into a controversy on the Apostles' Creed, in which the party antagonisms within the Prussian Church had found expression. Harnack's view is that the creed contains both too much and too little to be a satisfactory test for candidates for ordination, and he would prefer a briefer symbol which could be rigorously exacted from all (cf. his *Das apostolische Glaubensbekenntnis. Ein geschichtlicher Bericht nebst einem Nachworte*, 1892; 27th ed., 1896). At Berlin Harnack continued his literary labours. In 1893 he published a history of early Christian literature down to Eusebius, *Geschichte der altchristl. Litteratur bis Eusebius* (part 2 of vol. i., 1897); and in 1900 appeared his popular lectures, *Das Wesen des Christentums* (5th ed., 1901; English translation, *What is Christianity?* 1901; 3rd ed., 1904). One of his more recent historical works is *Die Mission und Ausbreitung des Christentums in den ersten drei Jahrhunderten* (1902; English translation in two volumes, 1904-1905). It has been followed by some very interesting and important New Testament studies (*Beiträge zur Einleitung in das neue Testament*, 1906 sqq.; Engl. trans.: *Luke the Physician*, 1907; *The Sayings of Jesus*, 1908). Harnack, both as lecturer and writer, was one of the most prolific and most stimulating of modern critical scholars, and trained up in his "*Seminar*" a whole generation of teachers, who carried his ideas and methods throughout the whole of Germany and even beyond its borders. His distinctive characteristics are his claim for absolute freedom in the study of church history and the New Testament; his distrust of speculative theology, whether orthodox or liberal; his interest in practical Christianity as a religious life and not a system of theology. Some of his addresses on social matters have been published under the heading "Essays on the Social Gospel" (1907).

HARNESS (from O. Fr. *harneis* or *harnois*; the ultimate origin is obscure; the Celtic origin which connects it with the Welsh *haiarn*, iron, has phonetic and other difficulties; the French is the origin of the Span. *arnes*, and Ger. *Harnisch*), probably, in origin, gear, tackle, equipment in general, but early applied particularly to the body armour of a soldier, including the trappings of the horse; now the general term for the gear of an animal used for draft purposes, traces, collar, bridle, girth, breeching, &c. It is usually not applied to the saddle or bridle of a riding animal. The word, in its original meaning of tackle or working apparatus, is still found in weaving, for the mechanism which shifts the warp-threads to form the "shed," and in bell-hanging, for the apparatus by which a large bell is hung. The *New English Dictionary* quotes an early use of the word for the lines, rod and hooks of an

angler (*Fysshing with an Angle, c.* 1450).

HARO, CLAMEUR DE, the ancient Norman custom of “crying for justice,” still surviving in the Channel Islands. The wronged party must on his knees and before witnesses cry: “Haro! Haro! Haro! à l’aide, mon prince, on me fait tort.” This appeal has to be respected, and the alleged trespass or tort must cease till the matter has been thrashed out in the courts. The “cry” thus acts as an interim injunction, and no inhabitant of the Channel Islands would think of resisting it. The custom is undoubtedly very ancient, dating from times when there were no courts and no justice except such as was meted out by princes personally. The popular derivation for the name is that which explains “Haro” as an abbreviation of “Ha! Rollo,” a direct appeal to Rollo, first duke of Normandy. It is far more probable that haro is simply an exclamation to call attention (O.H.G. *hero*, *hara*, “here”!). Indeed it is clear that the “cry for justice” was in no sense an institution of Rollo, but was a method of appeal recognized in many countries. It is said to be identical with the “Legatro of the Bavarians and the Thuringians,” and the first mention of it in France is to be found in the “Grand coutumier de Normandie.” A similar custom, only observed in criminal charges, was recognized by the Saxon laws under the name of “Clamor Violentiae.” Thus there is reason to think that William the Conqueror on his arrival in England found the “cry” fully established as far as criminal matters were concerned. Later the “cry” was made applicable to civil wrongs, and, when the administration of justice became systematized, disappeared altogether in criminal cases. It naturally tended to become obsolete as the administration of justice became systematized, but it was long retained in north-western France in cases of disputed possession, and was not actually repealed until the close of the 18th century. A survival of the English form of haro is possibly to be found in the “Ara,” a cry at fairs when “settling time” arrived.

HAROLD I. (d. 1040), surnamed Harefoot, the illegitimate son of Canute, king of England, and Ælfgifu of Northampton. On the death of his father in 1035, he claimed the crown of England in opposition to Canute’s legitimate son, Hardicanute. His claims were supported by Leofric, earl of Mercia, and the north; those of Hardicanute by his mother, Queen Emma, Godwine, earl of the West-Saxons and the south. Eventually Harold was temporarily elected regent, pending a final settlement on Hardicanute’s return from Denmark. Hardicanute, however, tarried, and meanwhile Harold’s party increased rapidly. In 1037 he was definitely elected king, and banished Emma from the kingdom. The only events of his brief reign are ineffectual inroads of the Welsh and Scots. Hardicanute was preparing to invade England in support of his claims when Harold died at Oxford on the 10th of March 1040.

HAROLD II. (*c.* 1022-1066), king of the English, the second son of Earl Godwine, was born about 1022. While still very young (before 1045) he was appointed to the earldom of the East-Angles. He shared his father’s outlawry and banishment in 1051; but while Godwine went to Flanders, Harold with his brother Leofwine took refuge in Ireland. In 1052 Harold and Leofwine returned. Having plundered in the west of England, they joined their father, and were with him at the assembly which decreed the restoration of the whole family. Harold was now restored to his earldom of the East-Angles, and on his father’s death in 1053 he succeeded him in the greater earldom of the West-Saxons. He was now the chief man in the kingdom, and when the older earls Leofric and Siward died his power increased yet more, and the latter part of Edward’s reign was virtually the reign of Harold. In 1055 he drove back the Welsh, who had burned Hereford. In 1063 came the great Welsh war, in which Harold, with the help of his brother Tostig, crushed the power of Gruffyd, who was killed by his own people. But in spite of his power and his prowess, Harold was the minister of the king rather than his personal favourite. This latter position rather belonged to Tostig, who on the death of Siward in 1055 received the earldom of Northumberland. Here, however, his harshness soon provoked enmity, and in 1065 the Northumbrians revolted against him, choosing Morkere in his place. Harold acted as mediator between the king and the insurgents, and at length agreed to the choice of Morkere, and the banishment of his brother. At the beginning of 1066 Edward died, with his last breath recommending Harold as his successor. He was accordingly elected at once and crowned. The men of Northumberland at first refused to acknowledge him, but Harold won them over. The rest of his brief reign was taken up with preparations against the attacks which threatened him on both sides at once. William challenged the crown, alleging both a bequest of Edward in bis favour and a personal engagement which Harold had contracted towards him—probably in 1064; and prepared for the invasion of England. Meanwhile Tostig was trying all means to bring about his own restoration. He first attacked the Isle of Wight, then Lindesey, but was compelled to take shelter in Scotland. From May to September the king kept the coast with a great force by sea and land, but at last provisions failed and the land army was dispersed. Harold then came to London, ready to meet whichever enemy came first. By this time Tostig had engaged Harold Hardrada of Norway to invade England. Together they sailed up the Humber, defeated Edwin and Morkere, and received the submission of York. Harold hurried northwards; and on the 25th of September he came on the Northmen at Stamford Bridge and won a complete victory, in which Tostig and Harold Hardrada were slain. But two days later William landed at Pevensey. Harold marched southward as fast as possible. He gathered his army in London from all southern and eastern England, but Edwin and Morkere kept back the forces of the north. The king then marched into Sussex and engaged the Normans on the hill of Senlac near Battle (see Hastings). After a fight which lasted from morning till evening, the Normans had the victory, and Harold and his two brothers lay dead on the field (14th of October 1066).

HARP (Fr. *harpe*; Ger. *Harfe*; Ital. *arpa*), a member of the class of stringed instruments of which the strings are twanged or vibrated by the fingers. The harp is an instrument of beautiful proportions, approximating to a triangular form, the strings diminishing in length as they ascend in pitch. The mechanism is concealed within the different parts of which the instrument is composed, (1) the pedestal or pedal-box, on which rest (2) the vertical pillar, and (3) the inclined convex body in which the soundboard is fixed, (4) the curved neck, with (5) the comb concealing the mechanism for stopping the strings, supported by the pillar and the body.

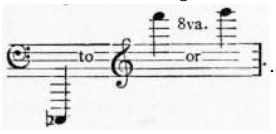
(1) The *pedestal* or *pedal-box* forms the base of the harp and contains seven pedals both in single and double action harps, the difference being that in the single action the pedals are only capable of raising the strings one semitone by means of a drop into a notch, whereas with the double action the pedals, after a first drop, can by a further drop into a second and lower notch shorten the string a second semitone, whereby each string is made to serve in turn for flat, natural and sharp. The harp is normally in the key of C flat major, and each of the seven pedals acts upon one of the notes of this diatonic scale throughout the compass. The choice of this method of tuning was imposed by the construction of the harp with double action. The pedals remain in the notches until released by the foot, when the pedal returns to its normal position through the action of a spiral spring, which may be seen under each of the pedals by turning the harp up.

(2) The *vertical pillar* is a kind of tunnel in which are placed the seven rods worked by the pedals, which set in motion the mechanism situated in the neck of the instrument. Although the pillar apparently rests on the pedestal, it is really supported by a brass shoulder firmly screwed to the beam which forms the lowest part of the body, a connexion which remains undisturbed when the pedal box and its cover are removed.

(3) The *body* or *sound-chest* of the harp is in shape like the longitudinal section of a cone. It was formerly composed of staves joined together as in the lute and mandoline. Erard was the first to make it in two pieces of wood, generally sycamore, with the addition of a flat soundboard of Swiss pine. The body is strengthened on the inside, in order to resist the tension of the strings, by means of ribs; there are five soundholes in the back, which in the older models were furnished with swell shutters opened at will by the swell pedal, the fourth from the left worked by the left foot. As the increase of sound obtained by means of the swell was infinitesimal, the device has now been discarded. The harp is strung by knotting the end of the string and passing it through its hole in the centre of the soundboard, where it is kept in position by means of a grooved peg which grips the string.

(4) The *neck* consists of a curved piece of wood resting on the body at the treble end of the instrument and joining the pillar at the bass end. In the neck are set the tuning pins round which are wound the strings.

(5) The *comb* is the name given to two brass plates or covers which fit over both sides of the neck, concealing part of the mechanism for shortening the strings and raising their pitch a semitone when actuated by the pedals. On the front plate of the comb, to the left of the player, is a row of brass bridges against which the strings rest below the tuning pins, and which determine the vibrating length of the string reckoned from the peg in the soundboard. Below the bridges are two rows of brass disks, known as forks, connected by steel levers; each disk is equipped with two studs for grasping the string and shortening it. The mechanism is ingenious. When a pedal is depressed to the first notch, the corresponding lower disk turns a little way on a mandrel keeping the studs clear of the string. The upper disk, set in motion by the steel levers connecting the disks, revolves simultaneously till the string is caught by the two studs which thus form a new bridge, shortening the vibrating length of the string by just the length necessary to raise the pitch a semitone. If the same pedal be depressed to the second notch, another movement causes the lower disk to revolve again till the string is a second time seized and shortened, the upper disk remaining stationary. The hidden mechanism meanwhile has gone through a series of movements; the pedal is really a lever set upon a spring, and when depressed it draws down the connecting rod in the pillar which sets in motion chains governing the mandrels of the disks.

The harp usually has forty-six strings, of gut in the middle and upper registers, and of covered steel wire in the bass; the C strings are red and the F strings blue. The compass thus has a range of 6½ octaves from 

. The double stave is used as for the pianoforte. The single action harp used to be tuned to the key of E♭ major.

The modern harp with double action is the only instrument with fixed tones, not determined by the ear or touch of the performer, which has separate notes for naturals, sharps and flats, giving it an enharmonic compass. On the harp the appreciable interval between D♯ and E♭ can be played. The harp in its normal condition is tuned to C♭ major; it rests with the performer to transpose it at will in a few seconds into any other key by means of the pedals. Each of the pedals influences one note of the scale throughout the compass, beginning at the left with D, C, and B worked by the left foot. Missing the fourth or forte pedal, and continuing towards the right we get the E, F, G and A pedals worked by the right foot. By lowering the D pedal into the first notch the D♭ becomes D♮, and into the second notch D♯, and so on for all the pedals. If, for example, a piece be written in the key of E major, the harp is transposed into that key by depressing the E, A, and B pedals to the first notch, and those for F, G, C and D to the second or sharp notch and so on through all the keys. Accidentals and modulations are readily played by means of the pedals, provided the transitions be not too rapid. The harp is the instrument upon which transposition presents the least difficulty, for the fingering is the same for all keys. The strings are twanged with the thumbs and the first three fingers.

The quality of tone does not vary much in the different registers, but it has the greatest brilliancy in keys with many flats, for the strings are then open and not shortened by the forks. Various effects can be obtained on the harp: (1) by harmonics, (2) by damping, (3) by guitar tones, (4) by the glissando. (1) Harmonics are produced by resting the ball of the hand on the middle of the string and setting it in vibration by the thumb or the first two fingers of the same hand, whereby a mysterious and beautiful tone is obtained. Two or three harmonics can be played together with the left hand, and by using both hands at once as many as four are possible. (2) Damping is effected by laying the palm against the string in the bass and the back of the finger in the treble. (3) Guitar or pizzicato notes are obtained by twanging the strings sharply at the lower end near the soundboard with the nails. (4) The glissando effect is produced, as on the pianoforte, by sliding the thumb or finger along the strings in quick succession; this does not necessarily give the diatonic scale, for by means of the pedals the harp can be tuned

beforehand to chords. It is possible to play on the harp all kinds of diatonic and arpeggio passages, but no chromatic, except in very slow tempo, on account of the time required by the mechanism of the pedals; and chords of three or four notes in each hand, shakes, turns, successions of double notes can be easily acquired. The same note can also be repeated slowly or quickly, the next string being tuned to a duplicate note, and the two strings plucked alternately in order to give the string time to vibrate.

Pleyel's chromatic harp, patented in 1894 and improved in 1903 by Gustave Lyon, manager of the firm of Pleyel, Wolff & Co., is an instrument practically without mechanism which has already won great favour in France and Belgium, notably in the orchestra. It has been constructed on the familiar lines of the pianoforte. Henry Pape, a piano manufacturer, had in 1845 conceived the idea of a chromatic harp of which the strings crossed in the centre as in the piano, and a report on the construction was published at the time; the instrument, however, was not considered successful, and was relegated to oblivion until Mr Lyon revised the matter and brought out a successful and practical instrument. The advantages claimed for this harp are the abandonment of the whole pedal mechanism, a metal framing which insures the strings keeping in tune as long as those of a piano, and an easily acquired technique. The chromatic harp consists of (1) a pedestal on castors, (2) a steel pillar without internal mechanism, (3) a wide neck containing two brass wrest-planks in which are fixed two rows of tuning pins, and (4) a soundchest in which is firmly riveted the steel plate to which the strings are fastened, and the soundboard pierced with eyelet holes through which the strings are drawn to the string plate. There is a string for every chromatic semitone of the scale of C major, the white strings representing the white keys of the piano keyboard, and the black strings corresponding to the black keys. The tuning pins for the black strings are set in the left side of the neck in alternate groups of twos and threes, and those for the white in the right side in alternate groups of threes and fours. The strings cross half-way between neck and soundboard, this being the point where they are plucked; the left hand finds the black notes above, and the right hand below the crossing. There is besides in the neck a set of twelve tuning buttons, each one of which on being pressed gives out one note of the chromatic scale tuned to the pitch of the diapason normal. It is obvious that the répertoire for this harp is very extensive, including many compositions written for the piano, which however cannot be played with any legato effects, these being still impossible on this chromatic harp.

History.—While the instrument is of great antiquity, it is yet from northern Europe that the modern harp and its name are derived. The Greeks and Romans preferred to it the lyre in its different varieties, and a Latin writer, Venantius Fortunatus,[1] describes it in the 7th century of our era as an instrument of the barbarians —"Romanusque lyra, plaudat tibi barbarus harpa." This is believed to be the earliest mention of the name, which is clearly Teutonic,—O.H.Ger. *harapha*, A.-S. *hearpe*, Old Norse *harpa*. The modern Fr. *harpe* retains the aspirate; in the Spanish and Italian *arpa* it is dropped.

The earliest delineations of the harp in Egypt give no indication that it had not existed long before. There are, indeed, representations in Egyptian paintings of stringed instruments of a bow-form having affinities with both primitive harp and *nefer* (a kind of oval guitar) that support the idea of the invention of the harp from the tense string of the warrior's or hunter's bow. This primitive-looking instrument, called *nanga*, had a boat-shaped sound-chest with a parchment or skin soundboard, down the centre of which one end of the string was fastened to a strip of wood, whilst the other was wound round pegs in the upper part of the bow. The nanga was played horizontally, being borne upon the performer's shoulder.[2] Between it and the grand vertical harps in the frescos of the time of Rameses III., more than 3000 years old, discovered by the traveller Bruce[3] (fig. 1), there are varieties that permit us to bind the whole, from the simplest bow-form to the almost triangular harp, into one family (see fig. 2).

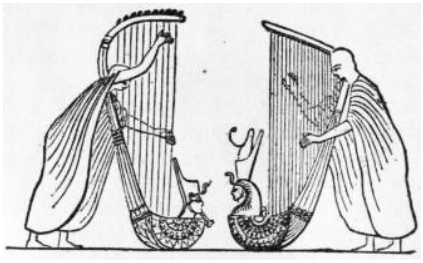


Fig. 1.

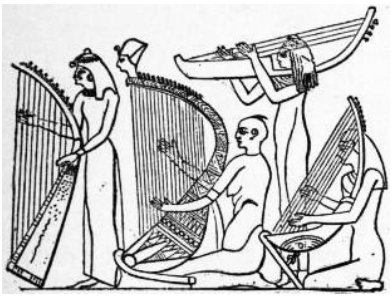


Fig. 2.

The Egyptian harp had no front pillar, and as it was strung with catgut the tension and pitch must necessarily have been low. The harps above-mentioned depicted in the tomb at Thebes, assumed from the players to be more than 6 ft. high, have not many strings, the one having ten, the other thirteen. What the accordance of these strings was it would be hard to recover. We must be content with the knowledge that the old Egyptians possessed harps in principle like our own, the largest having pedestals upon which they bestowed a wealth of decoration, as if to show how much they prized them.

The ancient Assyrians had harps like those of Egypt in being without a front pillar, but differing from them in having the sound-body uppermost, in which we find the early use of soundholes; while the lower portion was a bar to which the strings were tied and by means of which the tuning was apparently effected.[4] What the Hebrew harp was, whether it followed the Egyptian or the Assyrian, we do not know. That King David played upon the harp as commonly depicted is rather a modern idea. Medieval artists frequently gave King David the psaltery, a horizontal stringed instrument from which has gradually developed the modern piano. The Hebrew "kinnor" may have been a kind of trigonon, a triangular stringed instrument between a small harp and a psaltery, sounded by a plectrum, or more probably, as advocated by Dr Stainer in his essay on the music of the Bible, a kind of lyre.

The earliest records that we possess of the Celtic race, whether Gaelic or Cymric, give the harp a prominent place and harpists peculiar veneration and distinction. The names for the harp are, however, quite different from the Teutonic. The Irish "clairseach," the Highland Scottish "clarsach," the Welsh, Cornish, Breton "telyn," "telein," "télen," show no etymological kinship to the other European names. The first syllable in clairseach or clarsach is derived from the Gaelic "clar," a board or table (soundboard), while the first syllable of telyn is distinctly Old Welsh, and has a tensile meaning; thus resonance supplies the one idea, tension the other.

The literature of these Celtic harps may be most directly found in Bunting's *Ancient Music of Ireland* (Dublin, 1840), Gunn's *Historical Enquiry respecting the Performance on the Harp in the Highlands of Scotland* (Edinburgh, 1807), and E. Jones's *Musical and Poetical Memoirs of the Welsh Bards* (London, 1784). The treatises of Walker, Dalyell, and others may also be consulted; but in all these authorities due care must be taken of the bias of patriotism, and the delusive aim to

reconstruct much that we must be content to receive as only vaguely indicated in records and old monuments. There is, however, one early Irish monument about which there can be no mistake, the harp upon a cross belonging to the ancient church of Ullard near Kilkenny, the date of which cannot be later than 830; the sculpture is rude, but the instrument is clearly shown by the drawing in Bunting's work to have no front pillar. This remarkable structural likeness to the old harps of Egypt and Assyria may be accidental, but permits the plausible hypothesis of Eastern descent. The oldest specimen of the beautiful form by which the Irish harp is now recognized, with gracefully curved front pillar and sweep of neck (the latter known as the harmonic curve), is the famous harp in Trinity College, Dublin, the possession of which has been attributed to King Brian Boiroimhe. From this mythic ownership Dr Petrie (see essay in Bunting) has delivered it; but he can only deduce the age from the ornamentation and heraldry, which fix its date in the 14th century or a little later. There is a cast of it in the Victoria and Albert Museum. The next oldest is in the Highlands of Scotland, the *Clarsach Lumanach*, or Lamont's Clarschoe, belonging, with another of later date, to the old Perthshire family of Robertson of Lude. Both are described in detail by Gunn. This Lamont harp was taken by a lady of that family from Argyleshire about 1460, on her marriage into the family of Lude. It had about thirty strings tuned singly, but the scale was sometimes doubled in pairs of unisons like lutes and other contemporary instruments. The Dalway harp in Ireland (fig. 3) inscribed "Ego sum Regina Cithararum," and dated 1621, appears to have had pairs of strings in the centre only. These were of brass wire, and played with the pointed finger-nails. The Italian contemporary "Arpa Doppia" was entirely upon the duplex principle, but with gut strings played by the fleshy ends of the fingers. When E. Bunting met at Belfast in 1792 as many Irish harpers as could be at that late date assembled, he found the compass of their harps to comprise  thirty notes which were tuned diatonically in the key of G, under certain circumstances transposable to C and rarely to D, the scales being the major of these keys. The harp first appeared in the coat of arms of Ireland in the reign of Henry VIII.; and some years after in a map of 1567 preserved in a volume of state papers, we find it truly drawn according to the outlines of the national Irish instrument.[5] References to the Highlands of Scotland are of necessity included with Ireland; and in both we find another name erroneously applied by lexicographers to the harp, viz. "cruit." Bunting particularly mentions the "cinnard cruit" (harp with a high head) and the "crom cruit" (the curved harp). In the Ossianic MSS. of the Dean of Lismore (1512) the word "crwt" occurs several times, and in Neill M'Alpine's *Gaelic Dictionary* (1832), which gives the dialect of Islay, closely related to that of Ulster, the word "cruit" is rendered "harp." The confusion doubtless arose from the fact that from the 11th century cithara is glossed *hearpan* in Anglo-Saxon MSS., a word which, like *citharisare* in medieval Latin, referred to plucking or twanging of strings in contradistinction to those instruments vibrated by means of the bow. In Irish of the 8th and 9th centuries (Zeuss) cithara is always glossed by "crot." The modern Welsh "crwth" is not a harp but a "rotta" (see Crowd). An old Welsh harp, not triple strung, exists, which bears a great resemblance to the Irish harp in neck, soundboard and soundholes. But this does not imply derivation of the harp of Wales from that of Ireland or the reverse. There is really no good historical evidence, and there may have been a common or distinct origin on which ethnology only can throw light.[6] The Welsh like the Irish harp was often an hereditary instrument to be preserved with great care and veneration, and used by the bards of the family, who were alike the poet-musicians and historians. A slave was not allowed to touch a harp, and it was exempted by the Welsh laws from seizure for debt. The old Welsh harp appears to have been at one time strung with horse-hair, and by the Eisteddfod laws the pupil spent his noviciate of three years in the practice of a harp with that stringing. The comparatively modern Welsh triple harp (fig. 4) is always strung with gut. It has a rising neck as before stated, and three rows of strings,—the outer rows tuned diatonic, the centre one chromatic for the sharps and flats. Jones gives it 98 strings and a compass of 5 octaves and one note, from violoncello C. As in all Celtic harps, the left is the treble hand, and in the triple harps there are 27 strings on that side, the right or bass hand having 37, and the middle or chromatic row 34.

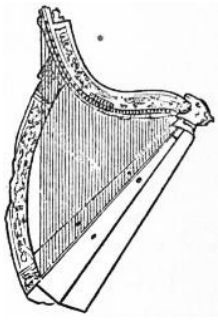


Fig. 3.
Irish (Dalway) Harp.

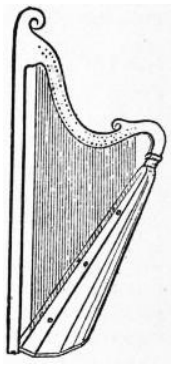


Fig. 4.
Welsh Triple Harp.

The first pattern of the modern harp is discovered in German and Anglo-Saxon illuminated MSS. as far back as the 9th century.[7] A diatonic instrument, it must have been common throughout Europe, as Orcagna, Fra Angelico, and other famous Italian painters depict it over and over again in their masterpieces. No accidental semitones were possible with this instrument, unless the strings were shortened by the player's fingers. This lasted until the 17th century, when a Tirolese maker adapted hooks[8] (perhaps suggested by the fretted or bonded clavichord) that, screwed into the neck, could be turned downwards to fix the desired semitone at pleasure. At last, somewhere about 1720, Hochbrucker, a Bavarian, invented pedals that, acting through the pedestal of the instrument, governed by mechanism the stopping, and thus left the player's hands free, an indisputable advantage; and it became possible at once to play in no less than eight major scales. By a sequence of improvements, in which two Frenchmen named Cousineau took an important part, the various defects inherent in Hochbrucker's plan became ameliorated. The pedals were doubled, and, the tuning of the instrument being changed from the key of E♭ to C♭, it became possible to play in fifteen keys, thus exceeding the power of the keyboard instruments, over which the harp has another important advantage in the simplicity of the fingering, which is the same for every key.

It is to Sebastian Erard we owe the perfecting of the pedal harp (fig. 5), a triumph he gained in Paris by unremitting studies begun when he adopted a "fork" mechanism in 1786 and ended in 1810 when he had attained complete success with the double action pedal mechanism already described above. Erard's merit was not confined to this improvement only; he modified the structure of the comb that conceals the mechanism, and constructed the sound-body of the instrument upon a modern principle more advantageous to the tone.

Notwithstanding these improvements and the great beauty of tone the harp possesses, the domestic use of it in modern times has almost disappeared. The great cost of a good harp, and the trouble to many amateurs of tuning, may have led to the supplanting of the harp by the more convenient and useful pianoforte. With this comes naturally a diminution in the number of solo-players on the instrument. Were it not for the increasing use of the harp in the orchestra, the colour of its tone having attracted the

masters of instrumentation, so that the great scores of Meyerbeer and Gounod, of Berlioz, Liszt and Wagner are not complete without it, we should perhaps know little more of the harp than of the dulcimer, in spite of the efforts of distinguished virtuosi whose devotion to their instrument maintains its technique on an equality with that of any other, even the most in public favour. The first record of the use of harps in the orchestra occurs in the account of the *Ballet comique de la royne* performed at the château de Moutiers on the occasion of the marriage of Mary of Lorraine with the duc de Joyeuse in 1581, when harps formed part of the *concert de musique*.

See in addition to the works already referred to, Engel's *Musical Instruments in the South Kensington Museum* (1874); and the articles "Harp," in Rees's *Cyclopaedia*, written by Dr Burney, in Stainer and Barrett's *Dictionary of Musical Terms* (1876), and in Grove's *Dictionary of Music and Musicians*. On the origins of the instrument see *Proceedings of British Association* (1904) (address of president of anthropological section).

(K. S.; A. J. H.)

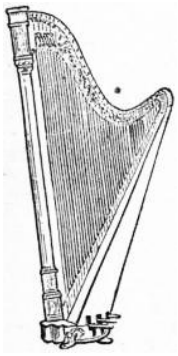


FIG. 5.
Modern Erard Harp.

1 *Poemata*, lib. vii. cap. 8, p. 245, Migne's *Patrologiae cursus completus* (Paris, 1857-1866, vol. 88).

2 A few nangas (*c.* 1500 B.C.) are preserved among the Egyptian antiquities at the British Museum, fourth Egyptian room.

3 Bruce's harps are reproduced by Champollion, tome iii. p. 261.

4 Representations of these may be seen among the musical scenes in the Nimrod Gallery at the British Museum.

5 See also a woodcut in John Derrick's *Image of Ireland* (1581), pl. iii. (Edinburgh ed. 1883).

6 See the fine volume *Musical Instruments* on the Irish and Scottish harps by Robert Bruce Armstrong (1904), vol. i. Vol. ii., which deals with the Welsh harp, has unfortunately been withdrawn from sale.

7 See for the medieval harp a careful article by Hortense Panum, "Harfe und Lyra im alten Nord-Europa," in *Intern. Mus. Ges.* vol. vii. pt. 1 (Leipzig, 1905); and for references as to illuminated MSS., early woodcuts, paintings, &c. see Hugo Leichtentritt, "Was lehren uns die Bildwerke des 14-17 Jahrhunderts über die Instrumentalmusik ihrer Zeit?" *ibid.* vol. vii. p. 3 (Leipzig, 1906).

8 See Nauwerk, "Die Hakenharfe, Die Vervollkommnung des Mechanismus an der deutschen Harfe." in *Allg. musik. Ztg.* (Leipzig, 1815), p. 545 seq.

HARPENDEN, an urban district in the Mid or St Albans parliamentary division of Hertfordshire, England, 25 m. N.W. by N. from London by the Midland railway, served also by a branch of the Great Northern railway. Pop. (1901) 4725. It is a favourite outlying residential district for those whose work lies in London. The church of St Nicholas is a modern reconstruction with the exception of the Perpendicular tower. In the Lawes Testimonial Laboratory there is a vast collection of samples of experimentally grown produce, annual products, ashes and soils. Sir John Bennet Lawes (d. 1900) provided an endowment of £100,000 for the perpetuation of the agricultural experiments which he inaugurated here at his seat of Rothamsted Park. The success of his association of chemistry with botany is shown by the fact that soil has been made to bear wheat without intermission for upwards of half a century without manure. The country neighbouring to Harpenden is very pleasant, including the gorse-covered Harpenden Common and the narrow well-wooded valley of the upper Lea.

HARPER'S FERRY, a town of Jefferson county, West Virginia, U.S.A., finely situated at the confluence of the Potomac and Shenandoah rivers (which here pass through a beautiful gorge in the Blue Ridge), 55 m. N.W. of Washington. Pop. (1900) 896; (1910) 766. It is served by the Baltimore & Ohio railway, which crosses the Potomac here, by the Winchester & Potomac railway (Baltimore & Ohio) of which it is a terminus, and by boats on the Chesapeake & Ohio Canal, which passes along the Maryland side of the Potomac. Across the Potomac on the north rise the Maryland Heights; across the Shenandoah, on the West Virginia side, the Virginia or Loudoun Heights; and behind the town to the W. the Bolivar Heights. A United States arsenal and armoury were established at Harper's Ferry in 1796, the site being chosen because of the good water-power; these were seized on the 16th of October 1859 by John Brown (*q.v.*), the abolitionist, and some 21 of his followers. For four months before the raid Brown and his men lived on the Kennedy Farm, in Washington county, Maryland, about 4 m. N.W. of Harper's Ferry. The engine-house in which Brown was captured was exhibited at the Columbian Exposition at Chicago and was later rebuilt on Bolivar Heights; a marble pillar, marked "John Brown's Fort," has been erected on its original site. On Camp Hill is Storer College (state-aided), a normal school for negroes, which was established under Free Baptist control in 1867, and has academic, normal, biblical, musical and industrial departments.

The first settlement here was made about 1747 by Robert Harper, who ran a ferry across the Potomac. The position of Harper's Ferry at the lower end of the Shenandoah Valley rendered it a place of strategic importance during the Civil War. On the 18th of April 1861, the day after Virginia passed her ordinance of secession, when a considerable force of Virginia militia under General Kenton Harper approached the town—an attack having been planned in Richmond two days before—the Federal garrison of 45 men under Lieutenant Roger Jones set fire to the arsenal and fled. Within the next few days large numbers of Confederate volunteers assembled here; and Harper was succeeded in command (27th April) by "Stonewall" Jackson, who was in turn succeeded by Brigadier-General Joseph E. Johnston on the 23rd of May. Johnston thought that the place was unimportant, and withdrew when (15th June) the Federal forces under General Robert Patterson and Colonel Lew Wallace approached, and

Harper's Ferry was again occupied by a Federal garrison. In September 1862, during General Lee's first invasion of the North, General McClellan advised that the place be abandoned in order that the 10,000 men defending it might be added to his fighting force, but General Halleck would not consent, so that when Lee needed supplies from the Shenandoah Valley he was blocked by the garrison, then under the command of Colonel Dixon S. Miles. On Jackson's approach they were distributed as follows: about 7000 men on Bolivar Heights, about 2000 on Maryland Heights, and about 1800 on the lower ground. On the 13th of September General Lafayette McLaws carried Maryland Heights and General John G. Walker planted a battery on Loudoun Heights. On the 14th there was some fighting, but early on the 15th, as Jackson was about to make an assault on Bolivar Heights, the garrison, surrounded by a superior force, surrendered. The total Federal loss (including the garrisons at Winchester and Martinsburg) amounted to 44 killed (the commander was mortally wounded), 12,520 prisoners, and 13,000 small arms. For this terrible loss to the Union army the responsibility seems to have been General Halleck's, though the blame was officially put on Colonel Miles, who died immediately after the surrender. Jackson rejoined Lee on the following day in time to take part in the battle of Antietam, and after the battle General McClellan placed a strong garrison (the 12th Corps) at Harper's Ferry. In June 1863 the place was again abandoned to the Confederates on their march to Pennsylvania. After their defeat at Gettysburg, the town again fell into the hands of the Federal troops, and it remained in their possession until the end of the war. On the 4th of July 1864 General Franz Sigel, who was then in command here, withdrew his troops to Maryland Heights, and from there resisted Early's attempt to enter the town and to drive the Federal garrison from Maryland Heights. Harper's Ferry was seriously damaged by a flood in the Shenandoah in October 1878.

HARPIES (Gr. Ἅρπυιαι, older form Ἀρέπυιαι, "swift robbers"), in ancient mythology, the personification of the sweeping storm-winds. In Homer, where they appear indifferently under the name of ἅρπυιαι and θύελλαι, their function is to carry off those whose sudden disappearance is desired by the gods. Only one of them is there mentioned (*Iliad*, xvi. 150) by name, Podargē, the mother of the coursers of Achilles by Zephyrus, the generative wind. According to Hesiod (*Theog.* 265) they are two in number, Aëllo and Ocypetē, daughters of Thaumas and Electra, winged goddesses with beautiful locks, swifter than winds and birds in their flight, and their domain is the air. In later times their number was increased (Celaeno being a frequent addition and their leader in Virgil), and they were described as hateful and repulsive creatures, birds with the faces of old women, the ears of bears, crooked talons and hanging breasts; even in Aeschylus (*Eumenides*, 50) they appear as ugly and misshapen monsters. Their function of snatching away mortals to the other world brings them into connexion with the Erinyes, with whom they are often confounded. On the so-called Harpy monument from Lycia, now in the British Museum, the Harpies appear carrying off some small figures, supposed to be the daughters of Pandareus, unless they are intended to represent departed souls. The repulsive character of the Harpies is more especially seen in the legend of Phineus, king of Salmydessus in Thrace (Apollodorus i. 9, 21; see also Diod. Sic. iv. 43). Having been deprived of his sight by the gods for his ill-treatment of his sons by his first wife (or for having revealed the future to mortals), he was condemned to be tormented by two Harpies, who carried off whatever food was placed before him. On the arrival of the Argonauts, Phineus promised to give them particulars of the course they should pursue and of the dangers that lay before them, if they would deliver him from his tormentors. Accordingly, when the Harpies appeared as usual to carry off the food from Phineus's table, they were driven off and pursued by Calaïs and Zetes, the sons of Boreas, as far as the Strophades islands in the Aegean. On promising to cease from molesting Phineus, their lives were spared. Their place of abode is variously placed in the Strophades, the entrance to the under-world, or a cave in Crete. According to Cecil Smith, *Journal of Hellenic Studies*, xiii. (1892-1893), the Harpies are the hostile spirits of the scorching south wind; E. Rohde (*Rheinisches Museum*, i., 1895) regards them as spirits of the storm, which at the bidding of the gods carry off human beings alive to the under-world or some spot beyond human ken.

15

See articles in Roscher's *Lexikon der Mythologie* and Daremberg and Saglio's *Dictionnaire des antiquités*. In the article Greek Art, fig. 14 gives a representation of the winged Harpies.

HARPIGNIES, HENRI (1819-), French landscape painter, born at Valenciennes in 1819, was intended by his parents for a business career, but his determination to become an artist was so strong that it conquered all obstacles, and he was allowed at the age of twenty-seven to enter Achard's atelier in Paris. From this painter he acquired a groundwork of sound constructive draughtsmanship, which is so marked a feature of his landscape painting. After two years under this exacting teacher he went to Italy, whence he returned in 1850. During the next few years he devoted himself to the painting of children in landscape setting, and fell in with Corot and the other Barbizon masters, whose principles and methods are to a certain extent reflected in his own personal art. To Corot he was united by a bond of warm friendship, and the two artists went together to Italy in 1860. On his return, he scored his first great success at the Salon, in 1861, with his "Lisière de bois sur les bords de l'Allier." After that year he was a regular exhibitor at the old Salon; in 1886 he received his first medal for "Le Soir dans la campagne de Rome," which was acquired for the Luxembourg Gallery. Many of his best works were painted at Hérisson in the Bourbonnais, as well as in the Nivernais and the Auvergne. Among his chief pictures are "Soir sur les bords de la Loire" (1861), "Les Corbeaux" (1865), "Le Soir" (1866), "Le Saut-du-Loup" (1873), "La Loire" (1882), and "Vue de Saint-Privé" (1883). He also did some decorative work for the Paris Opéra—the "Vallée d'Egérie" panel, which he showed at the Salon of 1870.

HARP-LUTE, or Dital Harp, one of the many attempts to revive the popularity of the guitar and to increase its compass, invented in 1798 by Edward Light. The harp-lute owes the first part of its name to the characteristic mechanism for shortening the effective length of the strings; its second name—dital harp—emphasizes the nature of the stops, which are worked by the thumb in contradistinction to the pedals of the harp worked by the feet. It consists of a pear-shaped body, to which is added a curved neck supported on a front pillar or arm springing from the body, and therefore reminiscent of the harp. There are 12 catgut strings. The curved fingerboard, almost parallel with the neck, is provided with frets, and has in addition a thumb-key for each string, by means of which the accordance of the string is mechanically raised a semitone at will. The dital or key, on being depressed, acts upon a stop-ring or eye, which draws the string down against the fret, and thus shortens its effective length. The fingers then stop the strings as usual over the remaining frets. A further improvement was patented in 1816 as the British harp-lute. Other attempts possessing less practical merit than the dital harp were the lyra-guitarre, which appeared in Germany at the beginning of the 19th century; the accord-guitarre, towards the middle of the same century; and the keyed guitar.

(K. S.)

HARPOCRATES, originally an Egyptian deity, adopted by the Greeks, and worshipped in later times both by Greeks and Romans. In Egypt, Harpa-khruti, Horus the child, was one of the forms of Horus, the sun-god, the child of Osiris. He was supposed to carry on war against the powers of darkness, and hence Herodotus (ii. 144) considers him the same as the Greek Apollo. He was represented in statues with his finger on his mouth, a symbol of childhood. The Greeks and Romans, not understanding the meaning of this attitude, made him the god of silence (Ovid, *Metam.* ix. 691), and as such he became a favourite deity with the later mystic schools of philosophy.

See articles by G. Lafaye in Daremberg and Saglio's *Dictionnaire des antiquités*, and by E. Meyer (*s.v.* "Horos") in Roscher's *Lexikon der Mythologie*.

HARPOCRATION, VALERIUS, Greek grammarian of Alexandria. He is possibly the Harpocration mentioned by Julius Capitolinus (*Life of Verus*, 2) as the Greek tutor of Antoninus Verus (2nd century A.D.); some authorities place him much later, on the ground that he borrowed from Athenaeus. He is the author of a Λεξικὸν (or Περὶ τῶν λέξεων) τῶν δέκα ῥητόρων, which has come down to us in an incomplete form. The work contains, in more or less alphabetical order, notes on well-known events and persons mentioned by the orators, and explanations of legal and commercial expressions. As nearly all the lexicons to the Greek orators have been lost, Harpocration's work is especially valuable. Amongst his authorities were the writers of Atthides (histories of Attica), the grammarian Didymus, Dionysius of Halicarnassus, and the lexicographer Dionysius, son of Tryphon. The book also contains contributions to the history of Attic oratory and Greek literature generally. Nothing is known of an Ἀνθηρῶν συναγωγή, a sort of anthology or chrestomathy attributed to him by Suidas. A series of articles in the margin of a Cambridge MS. of the lexicon forms the basis of the *Lexicon rhetoricum Cantabrigiense* (see Dobree, P. P.).

The best edition is by W. Dindorf (1853); see also J. E. Sandys, *History of Classical Scholarship*, i. (1906), p. 325; C. Boysen, *De Harpocrationis fontibus* (Kiel, 1876).

HARPOON (from Fr. *harpon*, a grappling-iron, O. Fr. *harpe*, a dog's claw, an iron clamp for fastening stones together; the source of these words is the Lat. *harpago*, *harpa*, &c., formed from Gr. ἁρπαγή, hook, ἁρπάζειν, to snatch, tear away, cf. "harpy"), barbed spear, particularly one used for spearing whales or other large fish, and either thrown by hand or fired from a gun (see Whale-Fishery).

HARPSICHORD, Harpsicon, double virginals (Fr. *clavecin*; Ger. *Clavicymbel*, *Kiel-Flügel*; Ital. *arpicordo*, *cembalo*, *clavicembalo*, *gravecembalo*; Dutch, *clavisinbal*), a large keyboard instrument (see Pianoforte), belonging to the same family as the virginal and spinet, but having 2, 3, or even 4 strings to each note, and a case of the harp or wing shape, afterwards adopted for the grand pianoforte. J. S. Bach's harpsichord, preserved in the museum of the Hochschule für Musik at Charlottenburg, has two manuals and 4 strings to each note, one 16 ft., two 8 ft. and one 4 ft. By means of stops the performer has within his power a number of combinations for varying the tone and dynamic power. In all instruments of the harpsichord family the strings, instead of being struck by tangents as in the clavichord, or by hammers as in the pianoforte, are plucked by means of a quill firmly embedded in the centred tongue of a jack or upright placed on the back end of the key-lever. When the finger depresses a key, the jack is thrown up, and in passing the crow-quill catches the string and twangs it. It is this twanging of the string which produces the brilliant incisive tone peculiar to the harpsichord family. What these instruments gain in brilliancy of tone, however, they lose in power of expression and of accent. The impossibility of commanding any emphasis necessarily created for the harpsichord an individual technique which influenced the music composed for it to so great an extent that it cannot be adequately rendered upon the pianoforte.

The harpsichord assumed a position of great importance during the 16th and 17th centuries, more especially in the orchestra, which was under the leadership of the harpsichord player. The most famous of all harpsichord makers, whose names form a guarantee for excellence, were the Ruckers, established at Antwerp from the last quarter of the 16th century.

(K. S.)

HARPY, a large diurnal bird of prey, so named after the mythological monster of the classical poets (see HARPIES),—the *Thrasaëtus harpyia* of modern ornithologists—an inhabitant of the warmer parts of America from Southern Mexico to Brazil. Though known since the middle of the 17th century, its habits have come very little under the notice of naturalists, and what is said of them by the older writers must be received with some suspicion. A cursory inspection of the bird, which is not unfrequently brought alive to Europe, its size, and its enormous bill and talons, at once suggest the vast powers of destruction imputed to it, and are enough to account for the stories told of its ravages on mammals—sloths, fawns, peccaries and spider-monkeys. It has even been asserted to attack the human race. How much of this is fabulous there seems no means at present of determining, but some of the statements are made by veracious travellers—D'Orbigny and Tschudi. It is not uncommon in the forests of the isthmus of Panama, and Salvin says (*Proc. Zool. Society*, 1864, p. 368) that its flight is slow and heavy. Indeed its owl-like visage, its short wings and soft plumage, do not indicate a bird of very active habits, but the weapons of offence with which it is armed show that it must be able to cope with vigorous prey. Its appearance is sufficiently striking—the head and lower parts, except a pectoral band, white, the former adorned with an erectile crest, the upper parts dark grey banded with black, the wings dusky, and the tail barred; but the huge bill and powerful scutellated legs most of all impress the beholder. The precise affinities of the harpy cannot be said to have been determined. By some authors it is referred to the eagles, by others to the buzzards, and by others again to the hawks; but possibly the first of these alliances is the most likely to be true.

(A. N.)

Harpy.

HARRAN, HARAN or CHARRAN (Sept. Χαῤῥάν or Χαῤῥά: Strabo, Κάῤῥαι: Pliny, *Carrae* or *Carrhae*; Arab. *Harrān*), in biblical history the place where Terah halted after leaving Ur, and apparently the birthplace of Abraham, a town on the stream Jullab, some nine hours' journey from Edessa in Syria. At this point the road from Damascus joins the highway between Nineveh and Carchemish, and Haran had thus considerable military and commercial value. As a strategic position it is mentioned in inscriptions as early as the time of Tiglath Pileser I., about 1100 B.C., and subsequently by Sargon II., who restored the privileges lost at the rebellion which led to the conquest referred to in 2 Kings xix. 12 (= Isa. xxxvii. 12). It was the centre of a considerable commerce (Ezek. xxvii. 23), and one of its specialities was the odoriferous gum derived from the strobus (Pliny, *H.N.* xii. 40). It was here that Crassus in his eastern expedition was attacked and slain by the Parthians (53 B.C.); and here also the emperor Caracalla was murdered at the instigation of Macrinus (A.D. 217). Haran was the chief home of the moon-god Sin, whose temple was rebuilt by several kings, among them Assur-bani-pal and Nabunidus and Herodian (iv. 13, 7) mentions the town as possessing in his day a temple of the moon. In the middle ages it is mentioned as having been the seat of a particular heathen sect, that of the Haranite Sabeans. It retained its importance down to the period of the Arab ascendancy; but by Abulfeda it is mentioned as having before his time fallen into decay. It is now wholly in ruins. The Yahwistic writer (Gen. xxvii. 43) makes it the home of Laban and connects it with Isaac and Jacob. But we cannot thus put Haran in Aramnaharaim; the home of the Labanites is rather to be looked for in the very similar word Hauran.

HARRAR (or Harar), a city of N.E. Africa, in 8° 45′ N., 42° 36′ E., capital of a province of Abyssinia and 220 m. S.S.W. of the ports of Zaila (British) and Jibuti (French) on the Gulf of Aden. With Jibuti it is connected by a railway (188 m. long) and carriage-road. Harrar is built on the slopes of a hill at an elevation of over 5000 ft. A lofty stone wall, pierced by five gates and flanked by twenty-four towers, encloses the city, which has a population of about 40,000. The streets are steep, narrow, dirty and unpaved, the roadways consisting of rough boulders. The houses are in general made of undressed stone and mud and are flat-topped, the general aspect of the city being Oriental and un-Abyssinian. A few houses, including the palace of the governor and the foreign consulates, are of more elaborate and solid construction than the majority of the buildings. There are several mosques and an Abyssinian church (of the usual circular construction) built of stone. Harrar is a city of considerable commercial importance, through it passing all the merchandise of southern Abyssinia, Kaffa and Galla land. The chief traders are Abyssinians, Armenians and Greeks. The principal article of export is coffee, which is grown extensively in the neighbouring hills and is of the finest quality. Besides coffee there is a large trade in durra, the kat plant (used by the Mahommedans as a drug), ghee, cattle, mules and camels, skins and hides, ivory and gums. The import trade is largely in cotton goods, but every kind of merchandise is included.

Harrar is believed to owe its foundation to Arab immigrants from the Yemen in the 7th century of the Christian era. In the region of Somaliland, now the western part of the British protectorate of that name, the Arabs established the Moslem state of Adel or Zaila, with their capital at Zaila on the Gulf of Aden. In the 13th century the sultans of Adel enjoyed great power. In 1521 the then sultan Abubekr transferred the seat of government to Harrar, probably regarding Zaila as too exposed to the attacks of the Turkish and Portuguese navies then contending for the mastery of the Red Sea and Gulf of Aden. Abubekr's successor was Mahommed III., Ahmed ibn Ibrahim el-Ghazi (1507-1543), surnamed Gran (Granyé), the left-handed. He was not an Arab but, probably, of Somali origin. The son of a noted warrior, he quickly rose to supreme power, becoming sultan or amir in 1525. He is famous for his invasion of Abyssinia, of which country he was virtual master for several years. From the beginning of the 17th century Adel suffered greatly from the ravages of pagan Galla tribes, and Harrar sank to the position of an amirate of little importance. It was first visited by a European in 1854 when (Sir) Richard Burton spent ten days there in the guise of an Arab. In 1875 Harrar was occupied by an Egyptian force under Raouf Pasha, by whose orders the amir was strangled. The town remained in the possession of Egypt until 1885, when the garrison was withdrawn in consequence of the rising of the Mahdi in the Sudan. The Egyptian garrison and many Egyptian civilians, in all 6500 persons, left Harrar between November 1884 and the 25th of April 1885, when a son of the ruler who had been deposed by Egypt was installed as amir, the arrangement being carried out under the superintendence of British officers. The new amir held power until January 1887, in which month Harrar was conquered by Menelek II., king of Shoa (afterwards emperor of Abyssinia). The governorship of Harrar was by Menelek entrusted to Ras Makonnen, who held the post until his death in 1906.

The Harrari proper are of a distinct stock from the neighbouring peoples, and speak a special language. Harrarese is "a Semitic graft inserted into an indigenous stock" (Sir R. Burton, *First Footsteps in East Africa*). The Harrari are Mahommedans of the Shafa'i or Persian sect, and they employ the solar year and the Persian calendar. Besides the native population there are in Harrar colonies of Abyssinians, Somalis and Gallas. By the Somalis the place is called Adari, by the Gallas Adaray.

See Abyssinia; Somaliland. Also P. Paulitschke, *Harar: Forschungsreise nach den Somâl- und Galla-Ländern Ost-Afrikas* (Leipzig, 1888).

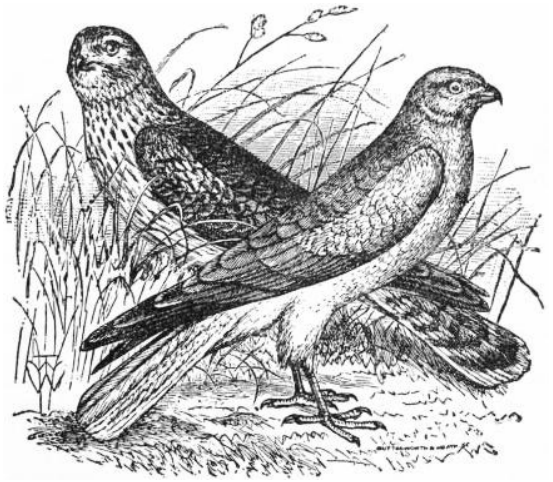
HARRATIN, black Berbers, dwelling in Tidikelt and other Saharan oases. Many of them are blacker than the average negro. In physique, however, they are true to the Berber type, being of handsome appearance with European features and well-proportioned bodies. They are the result of an early crossing with the Sudanese negro races, though to-day they have all the pride of the Berbers (*q.v.*), and do not live with or intermarry among negroes.

HARRIER, or Hen-Harrier, name given to certain birds of prey which were formerly very abundant in parts of the British Islands, from their habit of harrying poultry. The first of these names has now become used in a generic sense for all the species ranked under the genus *Circus* of Lacépède, and the second confined to the particular species which is the *Falco cyaneus* of Linnaeus and the *Circus cyaneus* of modern ornithologists.

One European species, *C. aeruginosus*, though called in books the marsh-harrier, is far more commonly known in England and Ireland as the moor-buzzard. But harriers are not, like buzzards, arboreal in their habits, and always affect open country, generally, though not invariably, preferring marshy or fenny districts, for snakes and frogs form a great part of their ordinary food. On the ground their carriage is utterly unlike that of a buzzard, and their long wings and legs render it easy to distinguish the two groups when taken in the hand. All the species also have a more or less well-developed ruff or frill of small thickset feathers surrounding the lower part of the head, nearly like that seen in owls, and accordingly many systematists consider that the genus *Circus*, though undoubtedly belonging to the *Falconidae*, connects that family with the Striges. No osteological affinity, however, can be established between the harriers and any section of the owls, and the superficial resemblance will have to be explained in some other way. Harriers are found almost all over the world,[1] and fifteen species are recognized by Bowdler Sharpe (*Cat. Birds Brit. Museum*, i. pp. 50-73). In most if not all the harriers the sexes differ greatly in

colour, so much so that for a long while the males and females of one of the commonest and best known, the *C. cyaneus* above mentioned, were thought to be distinct species, and were or still are called in various European languages by different names. The error was maintained with the greater persistency since the young males, far more abundant than the adults, wear much the same plumage as their mother, and it was not until after Montagu's observations were published at the beginning of the 19th century that the "ringtail," as she was called (the *Falco pygargus* of Linnaeus), was generally admitted to be the female of the "hen-harrier." But this was not Montagu's only good service as regards this genus. He proved the hitherto unexpected existence of a second species,[2] subject to the same diversity of plumage. This was called by him the ash-coloured falcon, but it now generally bears his name, and is known as Montagu's harrier, *C. cineraceus*. In habits it is very similar to the hen-harrier, but it has longer wings, and its range is not so northerly, for while the hen-harrier extends to Lapland, Montagu's is but very rare in Scotland, though in the south of England it is the most common species. Harriers indeed in the British Islands are rapidly becoming things of the past. Their nests are easily found, and the birds when nesting are easily destroyed. In the south-east of Europe, reaching also to the Cape of Good Hope and to India, there is a fourth species, the *C. swainsoni* of some writers, the *C. pallidus* of others. In North America *C. cyaneus* is represented by a kindred form, *C. hudsonius*, usually regarded as a good species, the adult male of which is always to be recognized by its rufous markings beneath, in which character it rather resembles *C. cineraceus*, but it has not the long wings of that species. South America has in *C. cinereus* another representative form, while China, India and Australia possess more of this type. Thus there is a section in which the males have a strongly contrasted black and grey plumage, and finally there is a group of larger forms allied to the European *C. aeruginosus*, wherein a grey dress is less often attained, of which the South African *C. ranivorus* and the New Zealand *C. gouldi* are examples.

(A. N.)



Hen-Harrier (Male and Female).

1 The distribution of the different species is rather curious, while the range of some is exceedingly wide,—one, *C. maillardi*, seems to be limited to the island of Réunion (Bourbon).

2 A singular mistake, which has been productive of further error, was made by Albin, who drew his figure (*Hist. Birds*, ii. pi. 5) from a specimen of one species, and coloured it from a specimen of the other.

HARRIGAN, EDWARD (1845-), American actor, was born in New York of Irish parents on the 26th of October 1845. He made his first appearance in San Francisco in 1867, and soon afterwards formed a stage partnership with Tony Hart, whose real name was Anthony Cannon. As "Harrigan and Hart," they had a great success in the presentation of types of low life in New York. Beginning as simple sketches, these were gradually worked up into plays, with occasional songs, set to popular music by David Braham. The titles of these plays indicate their character, *The Mulligan Guards*, *Squatter Sovereignty*, *A Leather Patch*, *The O'Regans*. The partnership with Hart lasted from 1871-1884. Subsequently Harrigan played in different cities of the United States, one of his favourite parts being George Coggswell in *Old Lavender*.

18

HARRIMAN, EDWARD HENRY (1848-1909), American financier and railroad magnate, son of the Rev. Orlando Harriman, rector of St George's Episcopal church, Hempstead, L.I., was born at Hempstead on the 25th of February 1848. He became a broker's clerk in New York at an early age, and in 1870 was able to buy a seat on the New York Stock Exchange on his own account. For a good many years there was nothing sensational in his success, but he built up a considerable business connexion and prospered in his financial operations. Meanwhile he carefully mastered the situation affecting American railways. In this respect he was assisted by his friendship with Mr Stuyvesant Fish, who, on becoming vice-president of the Illinois Central in 1883, brought Harriman upon the directorate, and in 1887, being then president, made Harriman vice-president; twenty years later it was Harriman who dominated the finance of the Illinois Central, and Fish, having become his opponent, was dropped from the board. It was not till 1898, however, that his career as a great railway organizer began with his formation, by the aid of the bankers, Kuhn, Loeb & Co., of a syndicate to acquire the Union Pacific line, which was then in the hands of a receiver and was generally regarded as a hopeless failure. It was soon found that a

new power had arisen in the railway world. Having brought the Union Pacific out of bankruptcy into prosperity, and made it an efficient instead of a decaying line, he utilized his position to draw other lines within his control, notably the Southern Pacific in 1901. These extensions of his power were not made without friction, and his abortive contest in 1901 with James J. Hill for the control of the Northern Pacific led to one of the most serious financial crises ever known on Wall Street. But in the result he became the dominant factor in American railway matters. At his death, on the 9th of September 1909, his influence was estimated to extend over 60,000 m. of track, with an annual earning power of $700,000,000 or over. Astute and unscrupulous manipulation of the stock markets, and a capacity for the hardest of bargaining and the most determined warfare against his rivals, had their place in this success, and Harriman's methods excited the bitterest criticism, culminating in a stern denunciation from President Roosevelt himself in 1907. Nevertheless, besides acquiring colossal wealth for himself, he helped to create for the American public a vastly improved railway service, the benefit of which survived all controversy as to the means by which he triumphed over the obstacles in his way.

HARRIMAN, a city of Roane county, Tennessee, U.S.A., on the Emory river, about 35 m. W. by S. of Knoxville. Pop. (1900) 3442 (516 being negroes); (1910) 3061. Harriman is served by the Harriman & North Eastern, the Tennessee Central, and the Southern railways. It is the seat of the East Tennessee Normal and Industrial Institute, for negroes, and of the American University of Harriman (Christian Church, coeducational; 1893), which comprises primary, preparatory, collegiate, Bible school, civic research, commercial, music and art departments, and in 1907-1908 had 12 instructors and 317 students. Near the city are large deposits of iron and an abundance of coal and timber. Among manufactures are cotton products, farming tools, leather, tannic acid, furniture and flour. Harriman was founded in 1890 by a land company. A clause in this company's by-laws requires that every conveyance of real estate by the company "shall contain a provision forbidding the use of the property or any building thereon, for the purpose of making, storing or selling intoxicating beverages as such." Harriman was chartered as a city in 1891, and its charter was revised in 1899.

HARRINGTON, EARLS OF. The first earl of Harrington was the diplomatist and politician, William Stanhope (*c.* 1690-1756), a younger son of John Stanhope of Elvaston, Derbyshire, and a brother of Charles Stanhope (1673-1760), an active politician during the reign of George I. His ancestor, Sir John Stanhope (d. 1638), was a half-brother of Philip Stanhope, 1st earl of Chesterfield. Educated at Eton, William Stanhope entered the army and served in Spain, but soon he turned his attention to more peaceful pursuits, went on a mission to Madrid and represented his country at Turin. When peace was made between England and Spain in 1720 Stanhope became British ambassador to the latter country, and he retained this position until March 1727, having built up his reputation as a diplomatist during a difficult period. In 1729 he had some part in arranging the treaty of Seville between England, France and Spain, and for his services in this matter he was created Baron Harrington in January 1730. Later in the same year he was appointed secretary of state for the northern department under Sir Robert Walpole, but, like George II., he was anxious to assist the emperor Charles VI. in his war with France, while Walpole favoured a policy of peace. Although the latter had his way Harrington remained secretary until the great minister's fall in 1742, when he was transferred to the office of president of the council and was created earl of Harrington and Viscount Petersham. In 1744, owing to the influence of his political allies, the Pelhams, he returned to his former post of secretary of state, but he soon lost the favour of the king, and this was the principal cause why he left office in October 1746. He was lord lieutenant of Ireland from 1747 to 1751, and he died in London on the 8th of December 1756.

The earl's successor was his son, William (1719-1779), who entered the army, was wounded at Fontenoy and became a general in 1770. He was a member of parliament for about ten years and he died on the 1st of April 1779. This earl's wife Caroline (1722-1784), daughter of Charles Fitzroy, 2nd duke of Grafton, was a noted beauty, but was also famous for her eccentricities. Their elder son, Charles (1753-1829), who became the 3rd earl, was a distinguished soldier. He served with the British army during the American War of Independence and attained the rank of general in 1802. From 1805 to 1812 he was commander-in-chief in Ireland; he was sent on diplomatic errands to Vienna and to Berlin, and he died at Brighton on the 15th of September 1829.

Charles Stanhope, 4th earl of Harrington (1780-1851), the eldest son of the 3rd earl, was known as Lord Petersham until he succeeded to the earldom in 1829. He was very well known in society owing partly to his eccentric habits; he dressed like the French king Henry IV., and had other personal peculiarities. He married the actress, Maria Foote, but when he died in March 1851 he left no sons, and his brother Leicester Fitzgerald Charles (1784-1862) became the 5th earl. This nobleman was a soldier and a politician of advanced views, who is best known as a worker with Lord Byron in the cause of Greek independence. He was in Greece in 1823 and 1824, where his relations with Byron were not altogether harmonious. He wrote *A Sketch of the History and Influence of the Press in British India* (1823); and *Greece in 1821 and 1824* (English edition 1824, American edition 1825). His son Sydney Seymour Hyde, 6th earl (1845-1866), dying unmarried, was succeeded by a cousin, Charles Wyndham Stanhope (1809-1881), as 7th earl, and in 1881 the latter's son Charles Augustus Stanhope (b. 1844) became 8th earl of Harrington.

Before the time of the first earl of Harrington the Stanhope family had held the barony of Stanhope of Harrington, which was created in 1605 in favour of Sir John Stanhope (*c.* 1550-1621) of Harrington, Northamptonshire. Sir John was a younger son of Sir Michael Stanhope (d. 1552) of Shelford, Nottinghamshire, who was a brother-in-law of the protector Somerset. Sir Michael's support of Somerset cost him his life, as he was beheaded on the 26th of February 1552. Sir John was treasurer of the chamber from 1596 to 1616 and was a member of parliament for several years. He died on the 9th of March 1621, and when his only son Charles, 2nd baron (*c.* 1595-1675), died without issue in 1675 the barony became extinct.

HARRINGTON, or Harington, **JAMES** (1611-1677), English political philosopher, was born in January 1611 of an old Rutlandshire family. He was son of Sir Sapcotes Harrington of Rand, Lincolnshire, and great-nephew of the first Lord Harington of Exton (d. 1615). In 1629 he entered Trinity College, Oxford, as a gentleman commoner. One of his tutors was the famous Chillingworth. After several years spent in travel, and as a soldier in the Dutch army, he returned to England and lived in retirement till 1646, when he was appointed to the suite of Charles I., at that time being conveyed from Newcastle as prisoner. Though republican in his ideas, Harrington won the king's regard and esteem, and accompanied him to the Isle of Wight. He roused, however, the suspicion of the parliamentarians and was dismissed: it is said that he was for a short time put in confinement because he would not swear to refuse assistance to the king should he attempt to escape. After Charles's death Harrington devoted his time to the composition of his *Oceana*, a work which pleased neither party. By order of Cromwell it was seized when passing through the press. Harrington, however managed to secure the favour of the Protector's favourite daughter, Mrs Claypole; the work was restored to him, and appeared in 1656, dedicated to Cromwell. The views embodied in *Oceana*, particularly that bearing on vote by ballot and rotation of magistrates and legislators, Harrington and others (who in 1659 formed a club called the "Rota") endeavoured to push practically, but with no success. In November 1661, by order of Charles II., Harrington was arrested, apparently without sufficient cause, on a charge of conspiracy, and was thrown into the Tower. Despite his repeated request no public trial could be obtained, and when at length his sisters obtained a writ of *habeas corpus* he was secretly removed to St Nicholas Island off Plymouth. There his health gave way owing to his drinking guaiacum on medical advice, and his mind appeared to be affected. Careful treatment restored him to bodily vigour, but his mind never wholly recovered. After his release he married,—at what date does not seem to be precisely known. He died on the 11th of September 1677, and was buried next to Sir Walter Raleigh in St Margaret's, Westminster.

Harrington's writings consist of the *Oceana*, and of papers, pamphlets, aphorisms, even treatises, in defence of the *Oceana*. The *Oceana* is a hard, prolix, and in many respects heavy exposition of an ideal constitution, "Oceana" being England, and the lawgiver Olphaus Megaletor, Oliver Cromwell. The details are elaborated with infinite care, even the salaries of officials being computed, but the main ideas are two in number, each with a practical corollary. The first is that the determining element of power in a state is property generally, property in land in particular; the second is that the executive power ought not to be vested for any considerable time in the same men or class of men. In accordance with the first of these, Harrington recommends an agrarian law, limiting the portion of land held to that yielding a revenue of £3000, and consequently insisting on particular modes of distributing landed property. As a practical issue of the second he lays down the rule of rotation by ballot. A third part of the executive or senate are voted out by ballot every year (not being capable of being elected again for three years). Harrington explains very carefully how the state and its governing parts are to be constituted by his scheme. *Oceana* contains many valuable ideas, but it is irretrievably dull.

His *Works* were edited with biography by John Toland in 1700; Toland's edition, with additions by Birch, appeared in 1747, and again in 1771. *Oceana* was reprinted by Henry Morley in 1887. See Dwight in *Political Science Quarterly* (March, 1887). Harrington has often been confused with his cousin Sir James Harrington, a member of the commission which tried Charles I., and afterwards excluded from the acts of pardon.

HARRIOT, or Harriott, **THOMAS** (1560-1621), English mathematician and astronomer, was born at Oxford in 1560. After studying at St Mary Hall, Oxford, he became tutor to Sir Walter Raleigh, who appointed him in 1585 to the office of geographer to the second expedition to Virginia. Harriot published an account of this expedition in 1588, which was afterwards reprinted in Hakluyt's *Voyages*. On his return to England, after an absence of two years, he resumed his mathematical studies, and having made the acquaintance of Henry Percy, earl of Northumberland, distinguished for his patronage of men of science, he received from him a yearly pension of £120. He died at London on the 2nd of July 1621. A manuscript of Harriot's entitled *Ephemeris chrysometria* is preserved in Sion College; and his *Artis analyticae praxis ad aequaliones algebraicas resolvendas* was published at London in 1631. His contributions to algebra are treated in the article Algebra; Wallis's *History of Algebra* (1685) may also be consulted. From some papers of Harriot's, discovered in 1784, it would appear that he had either procured a telescope from Holland, or divined the construction of that instrument, and that he coincided in point of time with Galileo in discovering the spots on the sun's disk.

See Charles Hutton, *Mathematical and Philosophical Dictionary* (1815), and J. E. Montucla, *Histoire des mathématiques* (1758).

HARRIS, GEORGE, 1st Baron (1746-1829), British general, was the son of the Rev George Harris, curate of Brasted, Kent, and was born on the 18th of March 1746. Educated at Westminster school and at the Royal Military Academy, Woolwich, he was commissioned to the Royal Artillery in 1760, transferring to an ensigncy in the 5th foot (Northumberland Fusiliers) in 1762. Three years later he became lieutenant, and in 1771 captain. His first active service was in the American War of Independence, in which he served at Lexington, Bunker Hill (severely wounded) and in every engagement of Howe's army except one up to November 1778. By this time he had obtained his majority, and his next service was under Major-General Medows at Santa Lucia in 1778-1779, after which his regiment served as marines in Rodney's fleet. Later in 1779 he was for a time a prisoner of war. Shortly before his promotion to lieutenant-colonel in his regiment (1780) he married. After commanding the 5th in Ireland for some years, he exchanged and went with General Medows to Bombay, and served with that officer

in India until 1792, taking part in various battles and engagements, notably Lord Cornwallis's attack on Seringapatam. In 1794, after a short period of home service, he was again in India. In the same year he became major-general, and in 1796 local lieutenant-general in Madras. Up to 1800 he commanded the troops in the presidency, and for a short time he exercised the civil government as well. In December 1798 he was appointed by Lord Wellesley, the governor-general, to command the field army which was intended to attack Tipu Sahib, and in a few months Harris reduced the Mysore country and stormed the great stronghold of Seringapatam. His success established his reputation as a capable and experienced commander, and its political importance led to his being offered the reward (which he declined) of an Irish peerage. He returned home in 1800, became lieutenant-general in the army the following year, and attained the rank of full general in 1812. In 1815 he was made a peer of the United Kingdom under the title Baron Harris of Seringapatam and Mysore, and of Belmont, Kent. In 1820 he received the G.C.B., and in 1824 the governorship of Dumbarton Castle. Lord Harris died at Belmont in May 1829. He had been colonel of the 73rd Highlanders since 1800.

His descendant, the 4th Baron Harris (b. 1851), best known as a cricketer, was under-secretary for India (1885-1886), under-secretary for war (1886-1889) and governor of Bombay (1890-1895).

See Rt. Hon. S. Lushington, *Life of Lord Harris* (London, 1840), and the regimental histories of the 5th Northumberland Fusiliers and 73rd Highlanders.

HARRIS, JAMES (1709-1780), English grammarian, was born at Salisbury on the 20th of July 1709. He was educated at the grammar school in the Close at Salisbury, and at Wadham College, Oxford. On leaving the university he was entered at Lincoln's Inn as a student of law, though not intended for the bar. The death of his father in 1733 placed him in possession of an independent fortune and of the house in Salisbury Close. He became a county magistrate, and represented Christchurch in parliament from 1761 till his death, and was comptroller to the queen from 1774 to 1780. He held office under Lord Grenville, retiring with him in 1765. The decided bent of his mind had always been towards the Greek and Latin classics; and to the study of these, especially of Aristotle, he applied himself with unremitting assiduity during a period of fourteen or fifteen years. He published in 1744 three treatises—on art; on music, painting and poetry; and on happiness. In 1751 appeared the work by which he became best known, *Hermes*, a philosophical inquiry concerning universal grammar. He also published *Philosophical Arrangements* and *Philosophical Inquiries*. Harris was a great lover of music, and adapted the words for a selection from Italian and German composers, published by the cathedral organist, James Corfe. He died on the 22nd of December 1780.

His works were collected and published in 1801, by his son, the first earl of Malmesbury, who prefixed a brief biography.

HARRIS, JOEL CHANDLER (1848-1908), American author, was born in Eatonton, Putnam county, Georgia, on the 8th of December 1848. He started as an apprentice to the printer's trade in the office of the *Countryman*, a weekly paper published on a plantation not far from his home. He then studied law, and practised for a short time in Forsyth, Ga., but soon took to journalism. He joined the staff of the Savannah *Daily News* in 1871, and in 1876 that of the Atlanta *Constitution*, of which he was an editor from 1890 to 1901, and in this capacity did much to further the cause of the New South. But his most distinctive contribution to this paper, and to American literature, consisted of his dialect pieces dealing with negro life and folk-lore. His stories are characterized by quaint humour, poetic feeling and homely philosophy; and "Uncle Remus," the principal character of most of them, is a remarkably vivid and real creation. The first collection of his stories was published in 1880 as *Uncle Remus: his Songs and his Sayings*. Among his later works are *Nights with Uncle Remus* (1883), *Mingo and Other Sketches in Black and White* (1884), *Free Joe and Other Georgian Sketches* (1887), *Balaam and His Master and Other Sketches and Stories* (1891), *Uncle Remus and His Friends* (1892), *On the Plantation* (1892), which is partly autobiographic, *Sister Jane* (1896), The *Chronicles of Aunt Minervy Ann* (1899), and *The Tar-Baby and Other Rhymes of Uncle Remus* (1904). More purely juvenile are *Daddy Jake the Runaway and Other Stories* (1889), *Little Mr Thimblefinger and his Queer Country* (1894) and its sequel *Mr Rabbit at Home* (1895), *Aaron in the Wildwoods* (1897), *Plantation Pageants* (1899), *Told by Uncle Remus* (1905), and *Uncle Remus and Br'er Rabbit* (1907). He was one of the compilers of the *Life of Henry W. Grady*, including his *Writings and Speeches* (1890) and wrote *Stories of Georgia* (1896), and Georgia from the Invasion of De Soto to Recent Times (1899). He died in Atlanta on the 3rd of July 1908.

HARRIS, JOHN (*c.* 1666-1719), English writer. He is best known as the editor of the *Lexicon technicum*, or *Dictionary of the Arts and Sciences* (1704), which ranks as the earliest of the long line of English encyclopaedias, and as the compiler of the *Collection of Voyages and Travels* which passes under his name. He was born about 1666, probably in Shropshire, and was a scholar of Trinity College, Oxford, from 1684 to 1688. He was presented to the vicarage of Icklesham in Sussex, and subsequently to the rectory of St Thomas, Winchelsea. In 1698 he was entrusted with the delivery of the seventh series of the Boyle lectures—*Atheistical Objections against the Being of God and His Attributes fairly considered and fully refuted*. Between 1702 and 1704 he delivered at the Marine Coffee House in Birchin Lane the mathematical lectures founded by Sir Charles Cox, and advertised himself as a mathematical tutor at Amen Corner. The friendship of Sir William Cowper, afterwards lord chancellor, secured

for him the office of private chaplain, a prebend in Rochester cathedral (1708), and the rectory of the united parishes of St Mildred, Bread Street and St Margaret Moses, in addition to other preferments. He showed himself an ardent supporter of the government, and engaged in a bitter quarrel with the Rev. Charles Humphreys, who afterwards was chaplain to Dr Sacheverel. Harris was one of the early members of the Royal Society, and for a time acted as vice-president. At his death on the 7th of September 1719, he was busy completing an elaborate *History of Kent*. He is said to have died in poverty brought on by his own bad management of his affairs.

HARRIS, THOMAS LAKE (1823-1906), American spiritualistic "prophet," was born at Fenny Stratford in Buckinghamshire, England, on the 15th of May 1823. His parents were Calvinistic Baptists, and very poor. They settled at Utica, New York, when Harris was five years old. When he was about twenty Harris became a Universalist preacher, and then a Swedenborgian. He became associated about 1847 with a spiritualist of indifferent character named Davis. After Davis had been publicly exposed, Harris established a congregation in New York. About 1850 he professed to receive inspirations, and published some long poems. He had the gift of improvisation in a very high degree. About 1859 he preached in London, and is described as a man "with low, black eyebrows, black beard, and sallow countenance." He was an effective speaker, and his poetry was admired by many; Alfred Austin in his book *The Poetry of the Period* even devoted a chapter to Harris. He founded in 1861 a community at Wassaic, New York, and opened a bank and a mill, which he superintended. There he was joined by about sixty converts, including five orthodox clergymen, some Japanese people, some American ladies of position, and especially by Laurence Oliphant (*q.v.*) with his wife and mother. The community—the Brotherhood of the New Life—decided to settle at the village of Brocton on the shore of Lake Erie. Harris established there a wine-making industry. In reply to the objections of teetotallers he said that the wine prepared by himself was filled with the divine breath so that all noxious influences were neutralized. Harris also built a tavern and strongly advocated the use of tobacco. He exacted complete surrender from his disciples—even the surrender of moral judgment. He taught that God was bi-sexual, and apparently, though not in reality, that the rule of society should be one of married celibacy. He professed to teach his community a change in the mode of respiration which was to be the visible sign of possession by Christ and the seal of immortality. The Oliphants broke away from the restraint about 1881, charging him with robbery and succeeding in getting back from him many thousands of pounds by legal proceedings. But while losing faith in Harris himself, they did not abandon his main teaching. In Laurence Oliphant's novel *Masollam* his view of Harris will be found. Briefly, he held that Harris was originally honest, greatly gifted, and possessed of certain psychical powers. But in the end he came to practise unbridled licence under the loftiest pretensions, made the profession of extreme disinterestedness a cloak to conceal his avarice, and demanded from his followers a blind and supple obedience. Harris in 1876 discontinued for a time public activities, but issued to a secret circle books of verse dwelling mainly on sexual questions. On these his mind ran from the first. In 1891 he announced that his body had been renewed, and that he had discovered the secret of the resuscitation of humanity. He published a book, *Lyra triumphalis*, dedicated to A. C. Swinburne. He also made a third marriage, and visited England intending to remain there. He was called back by a fire which destroyed large stocks of his wine, and remained in New York till 1903, when he visited Glasgow. His followers believed that he had attained the secret of immortal life on earth, and after his death on the 23rd of March 1906 declared that he was only sleeping. It was three months before it was acknowledged publicly that he was really dead. There can be little or no doubt as to the real character of Harris. His teaching was esoteric in form, but is a thinly veiled attempt to alter the ordering of sexual relations.

The authoritative biography from the side of his disciples is the *Life* by A. A. Cuthbert, published in Glasgow in 1908. It is full of the jargon of Harris's sect, but contains some biographical facts as well as many quotations. Mrs Oliphant's *Life of Laurence Oliphant* (1891) has not been shaken in any important particular, and Oliphant's own portrait of Harris in *Masollam* is apparently unexaggerated. But Harris had much personal magnetism, unbounded self-confidence, along with endless fluency, and to the last was believed in by some disciples of character and influence.

(W. R. Nɪ.)

HARRIS, SIR WILLIAM SNOW (1791-1867), English electrician, was descended from an old family of solicitors at Plymouth, where he was born on the 1st of April 1791. He received his early education at the Plymouth grammar-school, and completed a course of medical studies at the university of Edinburgh, after which he established himself as a general medical practitioner in Plymouth. On his marriage in 1824 he resolved to abandon his profession on account of its duties interfering too much with his favourite study of electricity. As early as 1820 he had invented a new method of arranging the lightning conductors of ships, the peculiarity of which was that the metal was permanently fixed in the masts and extended throughout the hull; but it was only with great difficulty, and not till nearly thirty years afterwards, that his invention was adopted by the government for the royal navy. In 1826 he read a paper before the Royal Society "On the Relative Powers of various Metallic Substances as Conductors of Electricity," which led to his being elected a fellow of the society in 1831. Subsequently, in 1834, 1836 and 1839, he read before the society several valuable papers on the elementary laws of electricity, and he also communicated to the Royal Society of Edinburgh various interesting accounts of his experiments and discoveries in the same field of inquiry. In 1835 he received the Copley gold medal from the Royal Society for his papers on the laws of electricity of high tension, and in 1839 he was chosen to deliver the Bakerian lecture. Meanwhile, although a government commission had recommended the general adoption of his conductors in the royal navy, and the government had granted him an annuity of £300 "in consideration of services in the cultivation of science," the naval authorities continued to offer various objections to his invention; to aid in removing these he in 1843 published his work on *Thunderstorms*, and also about the same time contributed a number of papers to the *Nautical Magazine* illustrative of damage by lightning. His system was actually adopted in the Russian navy before he succeeded in removing the prejudices against it in England, and in

1845 the emperor of Russia, in acknowledgment of his services, presented him with a valuable ring and vase. At length, the efficiency of his system being acknowledged, he received in 1847 the honour of knighthood, and subsequently a grant of £5000. After succeeding in introducing his invention into general use Harris resumed his labours in the field of original research, but as he failed to realize the advances that had been made by the new school of science his application resulted in no discoveries of much value. His manuals of *Electricity*, *Galvanism* and *Magnetism*, published between 1848 and 1856, were, however, written with great clearness, and passed through several editions. He died at Plymouth on the 22nd of January 1867, while having in preparation a *Treatise on Frictional Electricity*, which was published posthumously in the same year, with a memoir of the author by Charles Tomlinson.

HARRIS, WILLIAM TORREY (1835-1909), American educationist, was born in North Killingly, Connecticut, on the 10th of September 1835. He studied at Phillips Andover Academy, Andover, Massachusetts, and entered Yale, but left in his junior year (1857) to accept a position as a teacher of shorthand in the St Louis, Missouri, public schools. Advancing through the grades of principal and assistant superintendent, he was city superintendent of schools from 1867 until 1880. In 1858, under the stimulus of Henry C. Brockmeyer, Harris became interested in modern German philosophy in general, and in particular in Hegel, whose works a small group, gathering about Harris and Brockmeyer, began to study in 1859. From 1867 to 1893 Harris edited *The Journal of Speculative Philosophy* (22 vols.), which was the quarterly organ of the Philosophical Society founded in 1866. The Philosophical Society died out before 1874, when Harris founded in St Louis a Kant Club, which lived for fifteen years. In 1873, with Miss Susan E. Blow, he established in St Louis the first permanent public-school kindergarten in America. He represented the United States Bureau of Education at the International Congress of Educators at Brussels in 1880. In 1889 he represented the United States Bureau of Education at the Paris Exposition, and from 1889 to 1906 was United States commissioner of education. In 1899 the university of Jena gave him the honorary degree of Doctor of Philosophy for his work on Hegel. In 1906 the Carnegie Foundation for the Advancement of Teaching conferred upon him “as the first man to whom such recognition for meritorious service is given, the highest retiring allowance which our rules will allow, an annual income of $3000.” Besides being a contributor to the magazines and encyclopedias on educational and philosophical subjects, he wrote *An Introduction to the Study of Philosophy* (1889); *The Spiritual Sense of Dante’s Divina Commedia* (1889); *Hegel’s Logic* (1890); and *Psychologic Foundations of Education* (1898); and edited Appleton’s *International Education Series* and Webster’s *International Dictionary*. He died on the 5th of November 1909.

See Henry R. Evans, “A List of the Writings of William Torrey Harris” in the *Report of the Commissioner of Education for 1907*, vol. i. (Washington, 1908).

HARRISBURG, the capital of Pennsylvania, U.S.A., and the county-seat of Dauphin county, on the E. bank of the Susquehanna river, about 105 m. W. by N. of Philadelphia. Pop. (1890), 39,385; (1900), 50,167, of whom 2493 were foreign-born and 4107 were negroes; (1910 census) 64,186. It is served by the Pennsylvania, the Philadelphia & Reading, the Northern Central and the Cumberland Valley railways; and the Pennsylvania canal gives it water communication with the ocean. The river here is a mile wide, and is ordinarily very shallow and dotted with islets, but rises from 4 to 6 ft. after a moderate rain; it is spanned by several bridges.

The city lies for the most part on the E. slope of a hill extending from the river bank, several feet in height, across the Pennsylvania canal to Paxton Creek. Front Street, along the river, is part of a parkway connecting the park system with which the city is encircled. Overlooking it are the finest residences, among them the governor’s mansion. State Street, 120 ft. in width, runs at right angles with Front Street through the business centre of the city, being interrupted by the Capitol Park (about 16 acres). The Capitol,[1] dedicated in 1906, was erected to replace one burned in 1897; it is a fine building, with a dome modelled after St Peter’s at Rome. At the main entrance are bronze doors, decorated in relief with scenes from the state’s history; the floor of the rotunda is of tiles made at Doylestown, in the style of the pottery made by early Moravian settlers, and illustrating the state’s resources; the Senate Chamber and the House Chamber have stained-glass windows by W. B. van Ingen and mural paintings by Edwin A. Abbey, who painted a series, “The Development of the Law,” for the Supreme Court room in the eastern wing and decorated the rotunda. The mural decorations of the south corridor, by W. B. van Ingen, portray the state’s religious sects; those in the north corridor, by John W. Alexander, represent the changes in the physical and material character of the state; and there is a frieze by Miss Violet Oakley, “The Founding of the State of Liberty Spiritual,” in the governor’s reception room. Two heroic groups of statuary for the building were designed by George Grey Barnard. The state library in the Capitol contains about 150,000 volumes. In the same park is also a monument 105 ft. high erected in 1868 to the memory of the soldiers who fell in the Mexican War; it has a column of Maryland marble 76 ft. high, which is surmounted by an Italian marble statue of Victory, executed in Rome. At the base of the monument are muskets used by United States soldiers in that war and guns captured at Cerro Gordo. In State Street is the Dauphin County Soldiers’ monument, a shaft 10 ft. sq. at the base and 110 ft. high, with a pyramidal top.

For several years prior to 1902 Harrisburg suffered much from impure water, a bad sewerage system, and poorly paved and dirty streets. In that year, however, a League for Municipal Improvements was formed; in February 1902 a loan of $1,000,000 for municipal improvements was voted, landscape gardeners and sewage engineers were consulted, and a non-partisan mayor was elected, under whom great advances were made in street cleaning and street paving, a new filtration plant was completed, the river front was beautified and protected from flood, sewage was diverted from Paxton Creek, and the development of an extensive park system was undertaken.

Harrisburg’s charitable institutions include a city hospital, a home for the friendless, a children’s industrial

home, and a state lunatic hospital (1845). The city is the seat of a Roman Catholic bishopric. Both coal and iron ore abound in the vicinity, and the city has numerous manufacturing establishments. The value of its factory products in 1905 was $17,146,338 (14.3% more than in 1900), the more important being those of steel works and rolling mills ($4,528,907), blast furnaces, steam railway repair shops, cigar and cigarette factories ($1,258,498), foundries and machine shops ($953,617), boot and shoe factories ($922,568), flouring and grist mills, slaughtering and meat-packing establishments and silk mills.

Harrisburg was named in honour of John Harris, who, upon coming into this region to trade early in the 18th century, was attracted to the site as an easy place at which to ford the Susquehanna, and about 1726 settled here. He was buried in what is now Harris Park, where he erected the first building, a small hut, within the present limits of Harrisburg. In 1753 his son established a ferry over the river, and the place was called Harris's Ferry until 1785, when the younger Harris laid out the town and named it Harrisburg. In the same year it was made the county-seat of the newly constituted county of Dauphin, and its name was changed to Louisburg; but when, in 1791, it was incorporated as a borough, the present name was again adopted. In 1812, after an effort begun twenty-five years before, it was made the capital of the state; and in 1860 it was chartered as a city. In the summer of 1827, through the persistent efforts of persons most interested in the woollen manufactures of Massachusetts and other New England states to secure legislative aid for that industry, a convention of about 100 delegates—manufacturers, newspaper men and politicians—was held in Harrisburg, and the programme adopted by the convention did much to bring about the passage of the famous high tariff act of 1828.

1 For this building the legislature in 1901 appropriated $4,000,000, stipulating that it should be completed before the 1st of January 1907. It was completed by that time, the net expenditure of the building commission being about $3,970,000. Although the legislature had made no provision for furniture and decoration, the state Board of Public Grounds and Buildings (governor, auditor-general and treasurer) undertook to complete the furnishing and decoration of the building within the stipulated time, and paid out for that purpose more than $8,600,000. In May 1906 a new treasurer entered office, who discovered that many items for furniture and decoration were charged twice, once at a normal and again at a remarkably high figure. In 1907 the legislature appointed a committee to investigate the charge of fraud. The committee's decision was that the Board of Grounds and Buildings was not authorized to let the decorating and furnishing of the state house; that it had illegally authorized certain expenditures; and that architect and contractors had made fraudulent invoices and certificates. Various indictments were found: in the first trial for conspiracy in the making and delivering of furniture the contractor and the former auditor-general, state treasurer and superintendent of public grounds and buildings were convicted and in December 1908 were sentenced to two years' imprisonment and fined $500 each; in 1910 a suit was brought for the recovery of about $5,000,000 from those responsible.

HARRISMITH, a town in the Orange Free State, 60 m. N.W. by rail of Ladysmith, Natal, and 240 m. N.E. of Bloemfontein via Bethlehem. Pop. (1904) 8300 (including troops 1921). It is built on the banks of the Wilge, 5250 ft. above the sea and some 20 m. W. of the Drakensberg. Three miles N. is the Platberg, a table-shaped mountain rising 2000 ft. above the town, whence an excellent supply of water is derived. The town is well laid out and several of the streets are lined with trees. Most of the houses are built of white stone quarried in the neighbourhood. The Kaffirs, who numbered in 1904 3483, live in a separate location. Harrismith has a dry, bracing climate and enjoys a high reputation in South Africa as a health resort. It serves one of the best-watered and most fertile agricultural and pastoral districts of the province, of which it is the chief eastern trading centre. Wool and hides are the principal exports.

Harrismith was founded in 1849, the site first chosen being on the Elands river, where the small town of Aberfeldig now is; but the advantages of the present site soon became apparent and the settlement was removed. The founders were Sir Harry Smith (after whom the town is named), then governor of Cape Colony, and Major Henry D. Warden, at that time British resident at Bloemfontein, whose name is perpetuated in that of the principal street. In a cave about 2 m. from the town are well-preserved Bushman paintings.

HARRISON, BENJAMIN (1833-1901), the twenty-third president of the United States, was born at North Bend, near Cincinnati, Ohio, on the 20th of August 1833. His great-grandfather, Benjamin Harrison of Virginia (*c.* 1740-1791), was a signer of the Declaration of Independence. His grandfather, William Henry Harrison (1773-1841), was ninth president of the United States. His father, John Scott Harrison (1804-1878), represented his district in the national House of Representatives in 1853-1857. Benjamin's youth was passed upon the ancestral farm, and as opportunity afforded he attended school in the log school-house near his home. He was prepared for college by a private tutor, studied for two years at the Farmers' College, near Cincinnati, and in 1852 graduated from Miami University, at that time the leading educational institution in the State of Ohio. From his youth he was diligent in his studies and a great reader, and during his college life showed a marked talent for extemporaneous speaking. He pursued the study of law, partly in the office of Bellamy Storer (1798-1875), a leading lawyer and judge of Cincinnati, and in 1853 he was admitted to the bar. At the age of twenty-one he removed to Indianapolis. He had but one acquaintance in the place, the clerk of the federal court, who permitted him to occupy a desk in his office and place at the door his sign as a lawyer. Waiting for professional business, he was content to act as court crier for two dollars and a half a day; but he soon gave indications of his talent, and his studious habits and attention to his cases rapidly brought him clients. Within a few years he took rank among the leading members of the profession at a bar which included some of the ablest lawyers of the country. His legal career was early interrupted by the Civil War. His whole heart was enlisted in the anti-slavery cause, and during the second year of the war he accepted a commission from the governor of the state as second-lieutenant and speedily raised a regiment. He became its colonel, and as such continued in the Union Army until the close of the war, and on the 23rd of January 1865 was breveted a brigadier-general of volunteers for "ability and manifest energy and gallantry in command of brigade." He participated with his regiment in various engagements during

General Don Carlos Buell's campaigns in Kentucky and Tennessee in 1862 and 1863; took part in General W. T. Sherman's march on Atlanta in 1864 and in the Nashville campaign of the same year; and was transferred early in 1865 to Sherman's army in its march through the Carolinas. As the commander of a brigade he served with particular distinction in the battles of Kenesaw Mountain (June 29-July 3, 1864), Peach Tree Creek (20th of July 1864) and Nashville (15th-16th of December 1864).

Allowing for this interval of military service, he applied himself exclusively for twenty-four years to his legal work. The only office he held was that of reporter of the supreme court of Indiana for two terms (1860-1862 and 1864-1868), and this was strictly in the line of his profession. He was a devoted member of the Republican party, but not a politician in the strict sense. Once he became a candidate for governor, in 1876, but his candidature was a forlorn hope, undertaken from a sense of duty after the regular nominee had withdrawn. He took a deep interest in the campaign which resulted in the election of James A. Garfield as president, and was offered by him a place in his cabinet; but this he declined, having been elected a member of the United States Senate, in which he took his seat on the 4th of March 1881. He was chairman of the committee on territories, and took an active part in urging the admission as states of North Dakota, South Dakota, Washington, Idaho and Montana, which finally came into the Union during his presidency. He served also on the committee of military and Indian affairs, the committee on foreign relations and others, was prominent in the discussion of matters brought before the Senate from these committees, advocated the enlargement of the navy and the reform of the civil service, and opposed the pension veto messages of President Cleveland. Having failed to secure a re-election to the Senate in 1887, Harrison was nominated by the Republican party for the presidency in 1888, and defeated Grover Cleveland, the candidate of the Democratic party, receiving 233 electoral votes to Cleveland's 168. Among the measures and events distinguishing his term as president were the following: The meeting of the Pan-American Congress at Washington; the passage of the McKinley Tariff Bill and of the Sherman Silver Bill of 1890; the suppressing of the Louisiana Lottery; the enlargement of the navy; further advance in civil service reform; the convocation by the United States of an international monetary conference; the establishment of commercial reciprocity with many countries of America and Europe; the peaceful settlement of a controversy with Chile; the negotiation of a Hawaiian Annexation Treaty, which, however, before its ratification, his successor withdrew from the Senate; the settlement of difficulties with Germany concerning the Samoan Islands, and the adjustment by arbitration with Great Britain of the Bering Sea fur-seal question. His administration was marked by a revival of American industries and a reduction of the public debt, and at its conclusion the country was left in a condition of prosperity and on friendly terms with foreign nations. He was nominated by his party in 1892 for re-election, but was defeated by Cleveland, this result being due, at least in part, to the labour strikes which occurred during the presidential campaign and arrayed the labour unions against the tariff party.

After leaving public life he resumed the practice of the law, and in 1898 was retained by the government of Venezuela as its leading counsel in the arbitration of its boundary dispute with Great Britain. In this capacity he appeared before the international tribunal of arbitration at Paris in 1899, worthily maintaining the reputation of the American bar. After the Spanish-American War he strongly disapproved of the colonial policy of his party, which, however, he continued to support. He occupied a portion of his leisure in writing a book, entitled *This Country of Ours* (1897), treating of the organization and administration of the government of the United States, and a collection of essays by him was published posthumously, in 1901, under the title *Views of an Ex-President*. He died at Indianapolis on the 13th of March 1901. Harrison's distinguishing trait of character, to which his success is to be most largely attributed, was his thoroughness. He was somewhat reserved in manner, and this led to the charge in political circles that he was cold and unsympathetic; but no one gathered around him more devoted and loyal friends, and his dignified bearing in and out of office commanded the hearty respect of his countrymen.

President Harrison was twice married; in 1853 to Miss Caroline Lavinia Scott, by whom he had a son and a daughter, and in 1896 to Mrs Mary Scott Lord Dimmock, by whom he had a daughter.

A "campaign" biography was published by Lew Wallace (Philadelphia, 1888), and a sketch of his life may be found in *Presidents of the United States* (New York, 1894), edited by James Grant Wilson.

(J. W. Fo.)

HARRISON, FREDERIC (1831-), English jurist and historian, was born in London on the 18th of October 1831. Members of his family (originally Leicestershire yeomen) had been lessees of Sutton Place, Guildford, of which he wrote an interesting account (*Annals of an Old Manor House*, 1893). He was educated at King's College school and at Wadham College, Oxford, where, after taking a first-class in *Literae Humaniores* in 1853, he became fellow and tutor. He was called to the bar in 1858, and, in addition to his practice in equity cases, soon began to distinguish himself as an effective contributor to the higher-class reviews. Two articles in the *Westminster Review*, one on the Italian question, which procured him the special thanks of Cavour, the other on *Essays and Reviews*, which had the probably undesigned effect of stimulating the attack on the book, attracted especial notice. A few years later Mr Harrison worked at the codification of the law with Lord Westbury, of whom he contributed an interesting notice to Nash's biography of the chancellor. His special interest in legislation for the working classes led him to be placed upon the Trades Union Commission of 1867-1869; he was secretary to the commission for the digest of the law, 1869-1870; and was from 1877 to 1889 professor of jurisprudence and international law under the council of legal education. A follower of the positive philosophy, but in conflict with Richard Congreve (*q.v.*) as to details, he led the Positivists who split off and founded Newton Hall in 1881, and he was president of the English Positivist Committee from 1880 to 1905; he was also editor and part author of the Positivist *New Calendar of Great Men* (1892), and wrote much on Comte and Positivism. Of his separate publications, the most important are his lives of Cromwell (1888), William the Silent (1897), Ruskin (1902), and Chatham (1905); his *Meaning of History* (1862; enlarged 1894) and *Byzantine History in the Early Middle Ages* (1900); and his essays on *Early Victorian Literature* (1896) and *The Choice of Books* (1886) are remarkable alike for generous admiration and good sense. In 1904 he published a "romantic monograph" of the 10th century, *Theophano*, and in 1906 a verse tragedy, *Nicephorus*. An advanced and vehement Radical in politics and Progressive in municipal affairs, Mr Harrison in 1886 stood unsuccessfully for parliament against Sir John

Lubbock for London University. In 1889 he was elected an alderman of the London County Council, but resigned in 1893. In 1870 he married Ethel Berta, daughter of Mr William Harrison, by whom he had four sons. George Gissing, the novelist, was at one time their tutor; and in 1905 Mr Harrison wrote a preface to Gissing's *Veranilda* (see also Mr Austin Harrison's article on Gissing in the *Nineteenth Century*, September 1906). As a religious teacher, literary critic, historian and jurist, Mr Harrison took a prominent part in the life of his time, and his writings, though often violently controversial on political and social subjects, and in their judgment and historical perspective characterized by a modern Radical point of view, are those of an accomplished scholar, and of one whose wide knowledge of literature was combined with independence of thought and admirable vigour of style. In 1907 he published *The Creed of a Layman, Apologia pro fide mea*, in explanation of his religious position.

HARRISON, JOHN (1693-1776), English horologist, was the son of a carpenter, and was born at Faulby, near Pontefract in Yorkshire, in the year 1693. Thence his father and family removed in 1700 to Barrow in Lincolnshire. Young Harrison at first learned his father's trade, and worked at it for several years, at the same time occasionally making a little money by land-measuring and surveying. The bent of his mind, however, was towards mechanical pursuits. In 1715 he made a clock with wooden wheels, which is in the patent museum at South Kensington, and in 1726 he devised his ingenious "gridiron pendulum," which maintains its length unaltered in spite of variations of temperature (see Clock). Another invention of his was a recoil clock escapement in which friction was reduced to a minimum, and he was the first to employ the commonly used and effective form of "going ratchet," which is a spring arrangement for keeping the timepiece going at its usual rate during the interval of being wound up.

In Harrison's time the British government had become fully alive to the necessity of determining more accurately the longitude at sea. For this purpose they passed an act in 1713 offering rewards of £10,000, £15,000 and £20,000 to any who should construct chronometers that would determine the longitude within 60, 40 and 30 m. respectively. Harrison applied himself vigorously to the task, and in 1735 went to the Board of Longitude with a watch which he also showed to Edmund Halley, George Graham and others. Through their influence he was allowed to proceed in a king's ship to Lisbon to test it; and the result was so satisfactory that he was paid £500 to carry out further improvements. Harrison worked at the subject with the utmost perseverance, and, after making several watches, went up to London in 1761 with one which he considered almost perfect. His son William was sent on a voyage to Jamaica to test it; and, on his return to Portsmouth in 1762, it was found to have lost only 1 minute 54½ seconds. This was surprisingly accurate, as it determined the longitude within 18 m., and Harrison claimed the full reward of £20,000; but though from time to time he received sums on account, it was not till 1773 that he was paid in full. In these watches compensation for changes of temperature was applied for the first time by means of a "compensation-curb," designed to alter the effective length of the balance-spring in proportion to the expansion or contraction caused by variations of temperature. Harrison died in London on the 24th of March 1776. His want of early education was felt by him greatly throughout life. He was unfortunately never able to express his ideas clearly in writing, although in conversation he could give a very precise and exact account of his many intricate mechanical contrivances.

Among his writings were a *Description concerning such Mechanism as will afford a Nice or True Mensuration of Time* (1775), and *The Principles of Mr Harrison's Timekeeper*, published by order of the Commissioners of Longitude (1767).

HARRISON, THOMAS (1606-1660), English parliamentarian, a native of Newcastle-under-Lyme in Staffordshire, the son of a butcher and mayor of that town, was baptized in 1606. He was placed with an attorney of Clifford's Inn, but at the beginning of the war in 1642 he enlisted in Essex's lifeguards, became major in Fleetwood's regiment of horse under the earl of Manchester, was present at Marston Moor, at Naseby, Langport and at the taking of Winchester and Basing, as well as at the siege of Oxford. At Basing Harrison was accused of having killed a prisoner in cold blood. In 1646 he was returned to parliament for Wendover, and served in Ireland in 1647 under Lord Lisle, returning to England in May, when he took the side of the army in the dispute with the parliament and obtained from Fairfax a regiment of horse. In November he opposed the negotiations with the king, whom he styled "a man of blood" to be called to account, and he declaimed against the House of Lords. At the surprise of Lambert's quarters at Appleby on the 18th of July 1648, in the second civil war, he distinguished himself by his extraordinary daring and was severely wounded. He showed a special zeal in bringing about the trial of the king. Charles was entrusted to his care on being brought up from Hurst Castle to London, and believed that Harrison intended his assassination, but was at once favourably impressed by bis bearing and reassured by his disclaiming any such design. Harrison was assiduous in his attendance at the trial, and signed the death-warrant with the fullest conviction that it was his duty. He took part in suppressing the royalist rising in the midlands in May 1649, and in July was appointed to the chief command in South Wales, where he is said to have exercised his powers with exceptional severity. On the 20th of February 1651 he became a member of the council of state, and during Cromwell's absence in Scotland held the supreme military command in England. He failed in stopping the march of the royalists into England at Knutsford on the 16th of August 1651, but after the battle of Worcester he rendered great service in pursuing and capturing the fugitives. Later he pressed on Cromwell the necessity of dismissing the Long Parliament, and it was he who at Cromwell's bidding, on the 20th of April 1653, laid hands on Speaker Lenthall and compelled him to vacate the chair. He was president of the council of thirteen which now exercised authority, and his idea of government appears to have been an assembly nominated by the congregations, on a strictly religious basis, such as Barebone's Parliament which now assembled, of which he was a member and a ruling spirit. Harrison belonged to the faction of Fifth Monarchy men, whose political ideals were entirely destroyed by Cromwell's assumption of the protectorate. He went immediately into violent opposition, was deprived of his commission on the 22nd of December 1653, and on the

3rd of February 1654 was ordered to confine himself to his father's house in Staffordshire. Suspected of complicity in the plots of the anabaptists, he was imprisoned for a short time in September, and on that occasion was sent for by Cromwell, who endeavoured in a friendly manner to persuade him to desist. He, however, incurred the suspicions of the administration afresh, and on the 15th of February 1655 he was imprisoned in Carisbrooke Castle, being liberated in March 1656 when he took up his residence at Highgate with his family. In April 1657 he was arrested for supposed complicity in Venner's conspiracy, and again once more in February 1658, when he was imprisoned in the Tower. At the Restoration, Harrison, who was excepted from the Act of Indemnity, refused to take any steps to save his life, to give any undertaking not to conspire against the government or to flee. "Being so clear in the thing," he declared, "I durst not turn my back nor step a foot out of the way by reason I had been engaged in the service of so glorious and great a God." He was arrested in Staffordshire in May 1660 and brought to trial on the 11th of October. He made a manly and straightforward defence, pleading the authority of parliament and adding, "May be I might be a little mistaken, but I did it all according to the best of my understanding, desiring to make the revealed will of God in His holy scriptures a guide to me." At his execution, which took place at Charing Cross on the 13th of October 1660, he behaved with great fortitude.

Richard Baxter, who was acquainted with him, describes Harrison as "a man of excellent natural parts for affection and oratory, but not well seen in the principles of his religion of a sanguine complexion, naturally of such a vivacity, hilarity and alacrity as another man hath when he hath drunken a cup too much, but naturally also so far from humble thoughts of himself that it was his ruin." Cromwell also complained of his excessive eagerness. "Harrison is an honest man and aims at good things, yet from the impatience of his spirit will not wait the Lord's leisure but hurries me on to that which he and all honest men will have cause to repent." Harrison was an eloquent and fluent expounder of the scriptures, and his "raptures" on the field of victory are recorded by Baxter. He was of the chief of those "fiery spirits" whose ardent and emotional religion inspired their political action, and who did wonders during the period of struggle and combat, but who later, in the more sober and difficult sphere of constructive statesmanship, showed themselves perfectly incapable.

Harrison married about 1648 Katherine, daughter and heiress of Ralph Harrison of Highgate in Middlesex, by whom he had several children, all of whom, however, appear to have died in infancy.

See the article on Harrison by C. H. Firth in the *Dict. of Nat. Biog.; Life of Harrison* by C. H. Simpkinson (1905); *Notes and Queries*, 9 series, xi. 211.

HARRISON, THOMAS ALEXANDER (1853-), American artist, was born in Philadelphia on the 17th of January 1853. He was a pupil of the Pennsylvania Academy of Fine Arts and of the École des Beaux-Arts, Paris, whither he went in 1878, having previously been with a United States government survey expedition on the Pacific coast. Chafing under the restraints of the schools, he went into Brittany, and at Pont Aven and Concarneau turned his attention to marine painting and landscape. In 1882 he sent a figure-piece to the Salon, a fisher boy on the beach, which he called "Châteaux en Espagne." This attracted attention, and in 1885 he received an honourable mention, the first of many awards conferred upon him, including the Temple gold medal (Pennsylvania Academy of Fine Arts, Philadelphia, 1887), first medal, Paris Exhibition (1889), and medals in Munich, Brussels, Ghent, Vienna and elsewhere. He became a member of the Legion of Honour and *officier* of Public Instruction, Paris; a member of the Société Nationale des Beaux-Arts, Paris; of the Royal Institute of Painters in Oil Colours, London; of the Secession societies of Munich, Vienna and Berlin; of the National Academy of Design, the Society of American Artists, New York, and other art bodies. In the Salon of 1885 he had a large canvas of several nude women, called "In Arcady," a remarkable study of flesh tones in light and shade which had a strong influence on the younger men of the day. But his reputation rests rather on his marine pictures, long waves rolling in on the beach, and great stretches of open sea under poetic conditions of light and colour.

His brother, Birge Harrison (1854-), also a painter, particularly successful in snow scenes, was a pupil of the École des Beaux Arts, Paris, under Cabanel and Carolus Duran; his "November" (honourable mention, 1882) was purchased by the French government. Another brother, Butler Harrison (d. 1886), was a figure painter.

HARRISON, WILLIAM (1534-1593), English topographer and antiquary, was born in London on the 18th of April 1534. He was educated, according to his own account, at St Paul's school and at Westminster under Alexander Nowell. In 1551 he was at Cambridge, but he took his B.A. degree from Christ Church, Oxford, in 1560. He was inducted early in 1559 to the rectory of Radwinter, Essex, on the presentation of Sir William Brooke, Lord Cobham, to whom he had formerly acted as chaplain; and from 1571 to 1581 he held from another patron, Francis de la Wood, the living of Wimbish in the same county. He became canon of Windsor in 1586, and his death and burial are noted in the chapter book of St George's chapel on the 24th of April 1593.

His famous and amusing *Description of England* was undertaken for the queen's printer, Reginald Wolfe, who designed the publication of "an universall cosmographie of the whole world ... with particular histories of every knowne nation." After Wolfe's death in 1576 this comprehensive plan was reduced to descriptions and histories of England, Scotland and Ireland. The historical section was to be supplied by Raphael Holinshed, the topographical by Harrison. The work was eventually published as *The Chronicles of England, Scotland and Ireland ...* by Raphael Holinshed and others, and was printed in two black-letter folio volumes in 1577. Harrison's *Description of England*, humbly described as his "foule frizeled treatise," and dedicated to his patron Cobham, is an invaluable survey of the condition of England under Elizabeth, in all its political, religious and social aspects. Harrison is a minute and careful observer of men and things, and his descriptions are enlivened with many examples of a lively and caustic humour which makes the book excellent reading. In spite of his Puritan

prejudices, which lead him to regret that the churches had not been cleared of their “pictures in glass” (“by reason of the extreme cost thereof”), and to exhaust his wit on the effeminate Italian fashions of the younger generation, he had an eye for beauty and is loud in his praise of such architectural gems as Henry VII.’s chapel at Westminster. He is properly contemptuous of the snobbery that was even then characteristic of English society; but his account of “how gentlemen are made in England” must be read in full to be appreciated. He is especially instructive on the condition and services of the Church immediately after the Reformation; notably in the fact that, though an ardent Protestant, he is quite unconscious of any breach of continuity in the life and organization of the Church of England.

Harrison also contributed the translation from Scots into English of Bellenden’s version of Hector Boëce’s Latin *Description* of Scotland. His other works include a “Chronologie,” giving an account of events from the creation to the year 1593, which is of some value for the period covered by the writer’s lifetime. This, with an elaborate treatise on weights and measures, remains in MS. in the diocesan library of Londonderry.

For the later editions of the *Chronicles of England ...* see HOLINSHED. The second and third books of Harrison’s *Description* were edited by Dr F. J. Furnivall for the New Shakspere Society, with extracts from his “Chronologie” and from other contemporary writers, as *Shakspere’s England* (2 vols., 1877-1878).

HARRISON, WILLIAM HENRY (1773-1841), ninth president of the United States, was born at Berkeley, Charles City county, Virginia, on the 9th of February 1773, the third son of Benjamin Harrison (*c.* 1740-1791). His father was long prominent in Virginia politics, and became a member of the Virginia House of Burgesses in 1764, opposing Patrick Henry’s Stamp Act resolutions in the following year; he was a member of the Continental Congress in 1774-1777, signing the Declaration of Independence and serving for a time as president of the Board of War; speaker of the Virginia House of Delegates in 1777-1782; governor of Virginia in 1781-1784; and in 1788 as a member of the Virginia Convention he actively opposed the ratification of the Federal Constitution by his state. William Henry Harrison received a classical education at Hampden-Sidney College, where he was a student in 1787-1790, and began a medical course in Philadelphia, but the death of his father caused him to discontinue his studies, and in November 1791 he entered the army as ensign in the Tenth Regiment at Fort Washington, Cincinnati. In the following year he became a lieutenant, and subsequently acted as aide-de-camp to General Anthony Wayne in the campaign which ended in the battle of Fallen Timbers on the 10th of August 1794. He was promoted to a captaincy in 1797 and for a brief period served as commander of Fort Washington, but resigned from the army in June 1798. Soon afterwards he succeeded Winthrop Sargent as secretary of the North-west Territory. In 1799 he was chosen by the Jeffersonian party of this territory as the delegate of the territory in Congress. While serving in this capacity he devised a plan for disposing of the public lands upon favourable terms to actual settlers, and also assisted in the division of the North-west Territory. It was his ambition to become governor of the more populous eastern portion, which retained the original name, but instead, in January 1800, President John Adams appointed him governor of the newly created Indiana Territory, which comprised until 1809 a much larger area than the present state of the same name. (See INDIANA: *History*.) He was not sworn into office until the 10th of January 1801, and was governor until September 1812. Among the legislative measures of his administration may be mentioned the attempted modification of the slavery clause of the ordinance of 1787 by means of an indenture law—a policy which Harrison favoured; more effective land laws; and legislation for the more equitable treatment of the Indians and for preventing the sale of liquor to them. In 1803 Harrison also became a special commissioner to treat with the Indians “on the subject of boundary or lands,” and as such negotiated various treaties—at Fort Wayne (1803 and 1809), Vincennes (1804 and 1809) and Grouseland (1805)—by which the southern part of the present state of Indiana and portions of the present states of Illinois, Wisconsin and Missouri were opened to settlement. For a few months after the division in 1804 of the Louisiana Purchase into the Orleans Territory and the Louisiana Territory he also acted as governor of the Louisiana Territory—all of the Louisiana Purchase N. of the thirty-third parallel, his jurisdiction then being the greatest in extent ever exercised by a territorial official in the United States.

The Indian cessions of 1809, along the Wabash river, aroused the hostility of Tecumseh (*q.v.*) and his brother, familiarly known as “The Prophet,” who were attempting to combine the tribes between the Ohio and the Great Lakes in opposition to the encroachment of the whites. Several fruitless conferences between the governor and the Indian chiefs, who were believed to be encouraged by the British, resulted in Harrison’s advance with a force of militia and regulars to the Tippecanoe river, where (near the present Lafayette, Ind.) on the 7th of November 1811 he won over the Indians a victory which established his military reputation and was largely responsible for his subsequent nomination and election to the presidency of the United States. From one point of view the battle of Tippecanoe may be regarded as the opening skirmish of the war of 1812. When in the summer of 1812 open hostilities with Great Britain began, Harrison was appointed by Governor Charles Scott of Kentucky major-general in the militia of that state. A few weeks later (22nd August 1812) he was made brigadier-general in the regular U.S. army, and soon afterwards was put in command of all the troops in the north-west, and on the 2nd of March 1813 he was promoted to the rank of major-general. General James Winchester, whom Harrison had ordered to prepare to cross Lake Erie on the ice and surprise Fort Malden, turned back to rescue the threatened American settlement at Frenchtown (now Monroe), on the Raisin river, and there on the 22nd of January 1813 was forced to surrender to Colonel Henry A. Proctor. Harrison’s offensive operations being thus checked, he accomplished nothing that summer except to hold in check Proctor, who (May 1-5) besieged him at Fort Meigs, the American advanced post after the disaster of the river Raisin. After Lieutenant O. H. Perry’s naval victory on the 10th of September 1813, Harrison no longer had to remain on the defensive; he advanced to Detroit, re-occupied the territory surrendered by General William Hull, and on the 5th of October administered a crushing defeat to Proctor at the battle of the Thames.

In 1814 Harrison received no active assignments to service, and on this account and because the secretary of war (John Armstrong) issued an order to one of Harrison’s subordinates without consulting him, he resigned his commission. Armstrong accepted the resignation without consulting President Madison, but the president later utilized Harrison in negotiating with the north-western Indians, the greater part of whom agreed (22nd July 1814) to a second treaty of Greenville, by which they were to become active allies of the United States, should hostilities

with Great Britain continue. This treaty publicly marked an American policy of alliance with these Indians and caused the British peace negotiators at Ghent to abandon them. In the following year Harrison held another conference at Detroit with these tribes in order to settle their future territorial relations with the United States.

From 1816 to 1819 Harrison was a representative in Congress, and as such worked in behalf of more liberal pension laws and a better militia organization, including a system of general military education, of improvements in the navigation of the Ohio, and of relief for purchasers of public lands, and for the strict construction of the power of Congress over the Territories, particularly in regard to slavery. In accordance with this view in 1819 he voted against Tallmadge's amendment (restricting the extension of slavery) to the enabling act for the admission of Missouri. He also delivered forcible speeches upon the death of Kosciusko and upon General Andrew Jackson's course in the Floridas, favouring a partial censure of the latter.

Harrison was a member of the Ohio senate in 1819-1821, and was an unsuccessful candidate for the National House of Representatives in 1822, when his Missouri vote helped to cause his defeat; he was a presidential elector in 1824, supporting Henry Clay, and from 1825 to 1828 was a member of the United States Senate. In 1828 after unsuccessful efforts to secure for him the command of the army, upon the death of Major-General Jacob Brown, and the nomination for the vice-president, on the ticket with John Quincy Adams, his friends succeeded in getting Harrison appointed as the first minister of the United States to Colombia. He became, however, an early sacrifice to Jackson's spoils system, being recalled within less than a year, but not until he had involved himself in some awkward diplomatic complications with Bolivar's autocratic government.

For some years after his return from Colombia he lived in retirement at North Bend, Ohio. He was occasionally "mentioned" for governor, senator or representative, by the anti-Jackson forces, and delivered a few addresses on agricultural or political topics. Later he became clerk of the court of common pleas of Hamilton county—a lucrative position that was then most acceptable to him. Early in 1835 Harrison began to be mentioned as a suitable presidential candidate, and later in the year he was nominated for the presidency at large public meetings in Pennsylvania, New York and Maryland. In the election of the following year he attracted a large part of the Whig and Anti-Masonic vote of the Middle and Western states and led among the candidates opposing Van Buren, but received only 73 electoral votes while Van Buren received 170. His unexpected strength, due largely to his clear, if non-committal, political record, rendered him the most "available" candidate for the Whig party for the campaign of 1840, and he was nominated by the Whig convention at Harrisburg, Pa., in December 1839, his most formidable opponent being Henry Clay, who, though generally regarded as the real leader of his party, was less "available" because as a mason he would alienate former members of the old Anti-Masonic party, and as an advocate of a protective tariff would repel many Southern voters. The convention adjourned without adopting any "platform" of principles, the party shrewdly deciding to make its campaign merely on the issue of whether the Van Buren administration should be continued in power and thus to take full advantage of the popular discontent with the administration, to which was attributed the responsibility for the panic of 1837 and the subsequent business depression. Largely to attract the votes of Democratic malcontents the Whig convention nominated for the vice-presidency John Tyler, who had previously been identified with the Democratic party. The campaign was marked by the extraordinary enthusiasm exhibited by the Whigs, and by their skill in attacking Van Buren without binding themselves to any definite policy. Because of his fame as a frontier hero, of the circumstance that a part of his home at North Bend, Ohio, had formerly been a log cabin, and of the story that cider, not wine, was served on his table, Harrison was derisively called by bis opponents the "log cabin and hard cider" candidate; the term was eagerly accepted by the Whigs, in whose processions miniature log cabins were carried and at whose meetings hard cider was served, and the campaign itself has become known in history as the "log cabin and hard cider campaign." Harrison's canvass was conspicuous for the immense Whig processions and mass meetings, the numerous "stump" speeches (Harrison himself addressing meetings at Dayton, Chillicothe, Columbus and other places), and the use of campaign songs, of party insignia, and of campaign cries (such as "Tippecanoe and Tyler too"); and in the election he won by an overwhelming majority of 234 electoral votes to 60 cast for Van Buren.

President Harrison was inaugurated on the 4th of March 1841. He chose for his cabinet Daniel Webster as secretary of state, Thomas Ewing as secretary of the treasury, John Bell as secretary of war, George E. Badger as secretary of the navy, Francis Granger as postmaster-general, and John J. Crittenden as attorney-general. He survived his inauguration only one month, dying on the 4th of April 1841, and being succeeded by the vice-president, John Tyler. The immediate cause of his death was an attack of pneumonia, but the disease was aggravated by the excitement attending his sudden change in circumstances and the incessant demands of office seekers. After temporary interment at Washington, his body was removed to the tomb at North Bend, Ohio, where it now lies. A few of Harrison's public addresses survive, the most notable being *A Discourse on the Aborigines of the Ohio*. It has been said of him: "He was not a great man, but he had lived in a great time, and he had been a leader in great things." He was the first territorial delegate in the Congress of the United States and was the author of the first step in the development of the country's later homestead policy; the first presidential candidate to be selected upon the ground of "expediency" alone; and the first president to die in office. In 1795 he married Anna Symmes (1775-1864), daughter of John Cleves Symmes. Their grandson, Benjamin Harrison, was the twenty-third president of the United States.

AUTHORITIES.—In 1824 Moses Dawson published at Cincinnati the *Historical Narrative of the Civil and Military Services of Major-General William H. Harrison*. This is a combined defence and political pamphlet, but it is the source of all the subsequent "lives" that have appeared. There are several "campaign" biographies, including one by Richard Hildreth (1839) and one by Caleb Cushing (1840); and there is a good sketch in *Presidents of the United States* (New York, 1894), edited by J. G. Wilson. An excellent study of Harrison's career in Indiana appears in vol. 4 of the *Indiana Historical Society Publications*. Selections from his scanty correspondence appear in vols. ii. and iii. of the *Quarterly Publications* of the Historical and Philosophical Society of Ohio.

HARRISON, a town of Hudson county, New Jersey, U.S.A., on the Passaic river, opposite Newark (with which it is connected by bridges and electric railways), and 7 m. W. of Jersey City. Pop. (1890) 8338; (1900) 10,596, of whom 3633 were foreign-born; (1910 census) 14,498. It is served by the Pennsylvania, the Erie, and the Delaware, Lackawanna & Western railways. Harrison was chosen as the eastern terminal of the Pennsylvania

railroad for steam locomotive service, transportation thence to New York being by electric power through the railway's Hudson river tunnels. The town has an extensive river-front, along which are many of its manufactories; among their products are steam-pumps, steel, iron, machinery, roller bearings, brass tubing, iron and brass castings, marine engines, hoisting engines, metal novelties, dry batteries, electric lamps, concrete blocks, cotton thread, wire cloth, leather, trunks, beer, barrels, lumber, inks and cutlery. The factory product in 1905 was valued at $8,408,924. The town is governed by a mayor and a common council. Harrison was settled toward the close of the 17th century, and for many years constituted the S. portion of the township of Lodi. In 1840, however, it was set off from Lodi and named in honour of President William Henry Harrison, and in 1873 it was incorporated. Harrison originally included what is now the town of Kearny (*q.v.*).

HARRODSBURG, a city and the county-seat of Mercer county, Kentucky, U.S.A., 32 m. S. of Frankfort, on the Southern railway. Pop. (1890) 3230; (1900) 2876, of whom 1150 were negroes; (1910 U.S. census) 3147. On account of its sulphur springs Harrodsburg became early in the 19th century a fashionable resort, and continues to attract a considerable number of visitors. The city is the seat of Harrodsburg Academy, Beaumont College for women (1894; founded as Daughters' College in 1856); and Wayman College (African M.E.) for negroes. Among its manufactures are flour, whisky, dressed lumber and ice. About 7 m. E. of Harrodsburg is Pleasant Hill, or Union Village, a summer resort and the home, since early in the 19th century, of a Shaker community. Harrodsburg was founded on the 16th of June 1774 by James Harrod (1746-1793) and a few followers, and is the oldest permanent settlement in the state. It was incorporated in 1875. Harrodsburg was formerly the seat of Bacon College (see Lexington, Kentucky).

HARROGATE, a municipal borough and watering-place in the Ripon parliamentary division of the West Riding of Yorkshire, England, 203 m. N. by W. from London, on the North-Eastern railway. Pop. (1891) 16,316; (1901) 28,423. It is indebted for its rise and importance to its medicinal springs, and is the principal inland watering-place in the north of England. It consists of two scattered townships, Low Harrogate and High Harrogate, which have gradually been connected by a continuous range of handsome houses and villas. A common called the Stray, of 200 acres, secured by act of parliament from ever being built upon, stretches in front of the main line of houses, and on this account Harrogate, notwithstanding its rapid increase, has retained much of its rural charm. As regards climate a choice is offered between the more bracing atmosphere of High Harrogate and the sheltered and warm climate of the low town. The waters are chalybeate, sulphureous and saline, and some of the springs possess all these qualities to a greater or less extent. The principal chalybeate springs are the Tewitt well, called by Dr Bright, who wrote the first account of it, the "English Spa," discovered by Captain William Slingsby of Bilton Hall near the close of the 16th century; the Royal Chalybeate Spa, more commonly known as John's Well, discovered in 1631 by Dr Stanhope of York; Muspratt's chalybeate or chloride of iron spring discovered in 1819, but first properly analysed by Dr Sheridan Muspratt in 1865; and the Starbeck springs midway between High Harrogate and Knaresborough. The principal sulphur springs are the old sulphur well in the centre of Low Harrogate, discovered about the year 1656; the Montpellier springs, the principal well of which was discovered in 1822, situated in the grounds of the Crown Hotel and surmounted by a handsome building in the Chinese style, containing pump-room, baths and reading-room; and the Harlow Car springs, situated in a wooded glen about a mile west from Low Harrogate. Near Harlow Car is Harlow observatory, a square tower 100 ft. in height, standing on elevated ground and commanding a very extensive view. A saline spring situated in Low Harrogate was discovered in 1783. Some eighty springs in all have been discovered. The principal bath establishments are the Victoria Baths (1871) and the Royal Baths (1897). There are also a handsome kursaal (1903), a grand opera house, numerous modern churches, and several hospitals and benevolent institutions, including the Royal Bath hospital. The corporation owns the Stray, and also the Spa concert rooms and grounds, Harlow Moor, Crescent Gardens, Royal Bath gardens and other large open spaces, as well as Royal Baths, Victoria Baths and Starbeck Baths. The mineral springs are vested in the corporation. The high-lying moorland of the surrounding district is diversified by picturesque dales; and Harrogate is not far from many towns and sites of great interest, such as Ripon, Knaresborough and Fountains Abbey. The town was incorporated in 1884, and the corporation consists of a mayor, 8 aldermen and 24 councillors. Area, 3276 acres.

HARROW,[1] an agricultural implement used for (1) levelling ridges left by the plough and preparing a smooth surface for the reception of seeds; (2) covering in seeds after sowing; (3) tearing up and gathering weeds; (4) disintegrating and levelling the soil of meadows and pastures; (5) forming a surface tilth by pulverizing the top soil and so conserving moisture.

The harrow rivals the plough in antiquity. In its simplest form it consists of the boughs of trees interlaced into a wooden frame, and this form survives in the "bush-harrow." Another old type, found in the middle ages and still in use, consists of a wooden framework in which iron pegs or "tines" are set. This is now generally superseded by the "zig-zag" harrow patented by Armstrong in 1839, built of iron bars in which the tines are so arranged that each follows its own track and has a separate line of action. This harrow is usually made in two or three sections which fold over one another and are thus easily portable, the arrangement at the same time giving a flexibility on uneven ground. Additional flexibility may be imparted to the implement by jointing the stays of the frame which are in the line of draught. The liability that the tines may snap off is the chief weakness of this type, and

improvements have consisted chiefly in alterations in their shape and the method of fixing them to the frame.

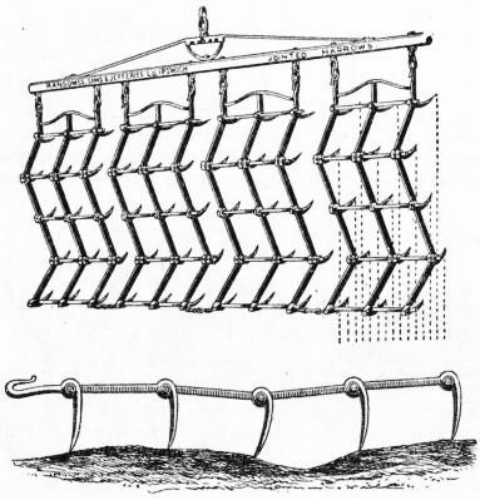


Fig. 1.—Jointed Zig-zag Harrow. (Ransomes, Sims & Jefferies, Ltd.)

The other type of harrow most used is the chain harrow, consisting of a number of square-link chains connected by cross links and attached to a draught-bar, the whole being kept expanded by stretchers and trailing weights. It is used for levelling and spreading manure over grass-land, from which it at the same time tears up moss and coarse herbage. Mention may also be made of the drag-harrow, a heavy implement with long tines, approximating closely to the cultivator, and of the Norwegian harrow with its revolving rows of spikes.

A few variations and developments of the ordinary harrow require notice. In the adjustable harrow (fig. 2) the teeth are secured to bars pivoted at their ends in the side bars of the frame, and provided with crank arms connected to a common link bar, which may be moved horizontally by means of a lever for the purpose of adjusting the angle which the teeth make with the ground, and thus convert the machine from a pulverizer to a smoothing harrow. The small figure illustrates a spring connexion between the adjusting lever and its locking bar, which allows the teeth to yield upon striking an obstruction. As the briskness of the operation adds to its effectiveness, the harrow is often made with a seat from which the operator can hasten the team without fatiguing himself.

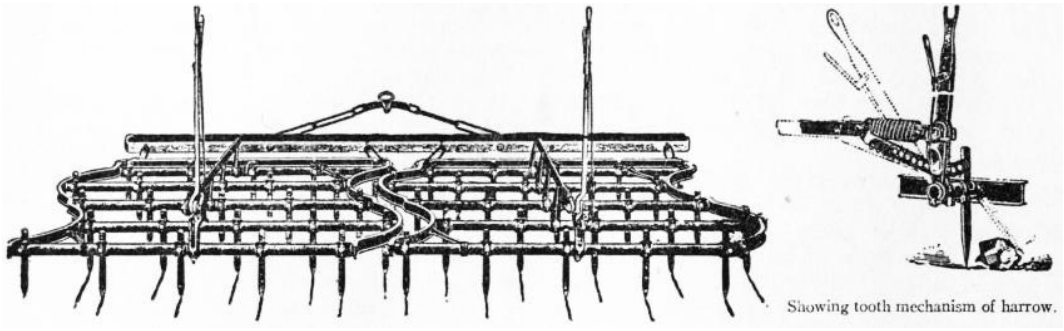


Fig. 2.—Adjustable Harrow.

Fig. 3 illustrates a spring-tooth harrow. In this harrow the independent frames are carried upon wheels, and a seat for the operator is mounted upon standards supported by the two frames. The teeth consist of flat steel springs of scroll form, which yield to rigid obstructions and are mounted on rock shafts in the same manner as in the walking harrow before described. The levers enable the operator to raise the teeth more or less, and thus free them from rubbish and also regulate the depth of action.

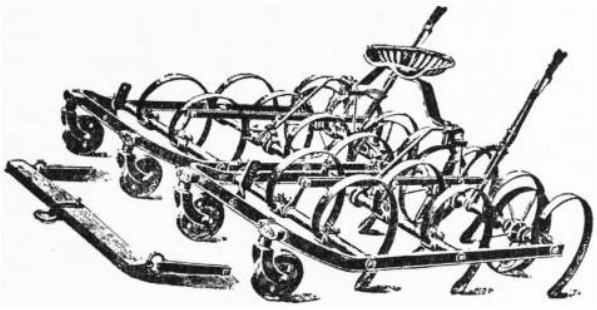


Fig. 3.—Spring-tooth Harrow.

Another variation of the harrow with great pulverizing and loosening capabilities consists of a main frame, having a pole and whipple-trees attached: to this frame are pivoted two supplemental frames, each of which has mounted on it a shaft carrying a series of concavo-convex disks. The supplemental frames may be swung by the adjusting levers to any angle with relation to the line of draught, and the disks then act like that of the disk plough (see PLOUGH), throwing the soil outward with more or less force, according to the angle at which they are set, and thus thoroughly breaking up and pulverizing the clods. Above the disks is a bar to which are pivoted a series of scrapers, one for each disk, which are held to their work with a yielding action, being thrown out of operation when desired by the levers shown in connexion with the operating bar. Pans on the main frame are used

to carry weights to hold the disks down to their work. The cut away disk harrow differs from the ordinary disk harrow in that its disks are notched and so have greater penetrating power. The curved knife-tooth harrow consists of a frame to which a row of curved blades is attached. Other forms of the implement are illustrated and discussed in *Farm Machinery and Farm Motors* by J. B. Davidson and L. W. Chase (New York, 1908).

---

1 In Mid. Eng. *harwe*; the O. Eng. appears to have been *hearge*; the word is cognate with the Dutch *hark*, Swed. *harke*, Ger. *Harke*, rake, and with Danish *harv*, and Swed. *harf*, harrow, but the ultimate origin is unknown; the Fr. *herse* is a different word, cf. HEARSE.

HARROWBY, DUDLEY RYDER, 1ST EARL OF (1762-1847), the eldest son of Nathaniel Ryder, 1st Baron Harrowby (1735-1803), was born in London on the 22nd of December 1762. His grandfather Sir Dudley Ryder (1691-1756) became a member of parliament and solicitor-general owing to the favour of Sir Robert Walpole in 1733; in 1737 he was appointed attorney-general and three years later he was knighted; in 1754 he was made lord chief justice of the king's bench and a privy councillor, the patent creating him a peer having been just signed by the king, but not passed, when he died on the 25th of May 1756. His only son Nathaniel, who was member of parliament for Tiverton for twenty years, was created Baron Harrowby in 1776. Educated at St John's College, Cambridge, Dudley Ryder became member of parliament for Tiverton in 1784 and under-secretary for foreign affairs in 1789. In 1791 he was appointed paymaster of the forces and vice-president of the board of trade, but he resigned the positions and also that of treasurer of the navy when he succeeded to his father's barony in June 1803. In 1804 he was secretary of state for foreign affairs and in 1805 chancellor of the duchy of Lancaster under his intimate friend William Pitt; in the latter year he was sent on a special and important mission to the emperors of Austria and Russia and the king of Prussia, and for the long period between 1812 and 1827 he was lord president of the council. After Canning's death in 1827 he refused to serve George IV. as prime minister and he never held office again, although he continued to take part in politics, being especially prominent during the deadlock which preceded the passing of the Reform Bill in 1832. Harrowby's long association with the Tories did not prevent him from assisting to remove the disabilities of Roman Catholics and Protestant dissenters, or from supporting the movement for electoral reform; he was also in favour of the emancipation of the slaves. The earl died at his Staffordshire residence, Sandon Hall, on the 26th of December 1847, being, as Charles Greville says, "the last of his generation and of the colleagues of Mr Pitt, the sole survivor of those stirring times and mighty contests."

Harrowby's eldest son, Dudley Ryder, 2nd earl (1798-1882), was born in London on the 19th of May 1798, his mother being Susan (d. 1838), daughter of Granville Leveson-Gower, marquess of Stafford, a lady of exceptional attainments. As Viscount Sandon he became member of parliament for Tiverton in 1819, in 1827 he was appointed a lord of the admiralty, and in 1830 secretary to the India board. From 1831 to 1847 Sandon represented Liverpool in the House of Commons. For a long time he was out of office, but in 1855, eight years after he had become earl of Harrowby, he was appointed chancellor of the duchy of Lancaster by Lord Palmerston; in a few months he was transferred to the office of lord privy seal, a position which he resigned in 1857. He was chairman of the Maynooth commission and a member of other important royal commissions, and was among the most stalwart and prominent defenders of the established church. He died at Sandon on the 19th of November 1882. His successor was his eldest son, Dudley Francis Stuart Ryder (1831-1900), vice-president of the council from 1874 to 1878, president of the board of trade from 1878 to 1880, and lord privy seal in 1885 and 1886. He died without sons on the 26th of March 1900, and was succeeded by his brother, Henry Dudley Ryder (1836-1900), whose son, John Herbert Dudley Ryder (b. 1864), became 5th earl of Harrowby.

HARROWING OF HELL, an English poem in dialogue, dating from the end of the 13th century. It is written in the East Midland dialect, and is generally cited as the earliest dramatic work of any kind preserved in the language, though it was in reality probably intended for recitation rather than performance; It is closely allied to the kind of poem known as a *débat*, and the opening words—"Alle herkneth to me nou A strif wille I tellen ou Of Jesu and of Satan"—seem to indicate that the piece was delivered by a single performer. The subject—the descent of Christ into Hades to succour the souls of the just, as related in the apocryphal gospel of Nicodemus—is introduced in a kind of prologue; then follows the dispute between "Dominus" and "Satan" at the gate of Hell; the gatekeeper runs away, and the just are set free, while Adam, Eve, Habraham, David, Johannes and Moyses do homage to the deliverer. The poem ends with a short prayer: "God, for his moder loue Let ous never thider come." Metrically, the poem is characterized by frequent alliteration imposed upon the rhymed octosyllabic couplet:— 29

Welcome, louerd, god of londe
Godes sone and godes sonde (ii. 149-150).

The piece is obviously connected with the Easter cycle of liturgical drama, and the subject is treated in the York and Townley plays.

MSS. are: Brit. Mus., Harl. MS. 2253; Edinburgh, Auchinleck MS., W 41; Oxford, Bodleian, Digby 86. It was privately printed by J. P. Collier and by J. O. Halliwell, but is available in Appendix III. of A. W. Pollard's *English Miracle Plays ...* (4th ed., 1904) K. Böddeker, *Altengl. Dichtungen des MS. Harl. 2253* (Berlin, 1878); and E. Mall, *The Harrowing of Hell* (Breslau, 1871). See also E. K. Chambers, *The Medieval Stage* (2 vols., 1903).

HARROW-ON-THE-HILL, an urban district in the Harrow parliamentary division of Middlesex, England, 12 m. W.N.W. of St Paul's cathedral, London, served by the London and North Western, Metropolitan and District railways. Pop. (1901), 10,220. It takes its name from its position on an isolated hill rising to a height of 345 ft. On the summit, and forming a conspicuous landmark, is the church of St Mary, said to have been founded by Lanfranc, archbishop of Canterbury, in the reign of William I., and Norman work appears at the base of the tower. The remainder of the church is of various later dates, and there are several ancient monuments and brasses.

Harrow is celebrated for its public school, founded in 1571 by John Lyon, whose brass is in the church, a yeoman of the neighbouring village of Preston who had yearly during his life set aside 20 marks for the education of poor children of Harrow; though a school existed before his time. Though the charter was granted by Queen Elizabeth in 1571, and the statutes drawn up by the founder in 1590, two years before his death, it was not till 1611 that the first building was opened for scholars. Lyon originally settled about two-thirds of his property on the school, leaving the remainder for the maintenance of the highway between London and Harrow, but in the course of time the values of the respective endowments have changed so far that the benefit accruing to the school is a small proportion of the whole. About 1660 the headmaster, taking advantage of a concession in Lyon's statutes, began to receive "foreigners," *i.e.* boys from other parishes, who were to pay for their education. From this time the prosperity of the school may be dated. In 1809 the parishioners of Harrow appealed to the court of chancery against the manner in which the school was conducted, but the decision, while it recognized their privileges, confirmed the right of admission to foreigners. The government of the school was originally vested in six persons of standing in the parish who had the power of filling vacancies in their number by election among themselves; but under the Public Schools Act of 1868 the governing body now consists of the surviving members of the old board, besides six new members who are elected respectively by the lord chancellor, the universities of Oxford, Cambridge and London, the Royal Society, and the assistant masters of the school. There are several scholarships in connexion with the school to Oxford and Cambridge Universities. Harrow was originally an exclusively classical school, but mathematics became a compulsory study in 1837; modern languages, made compulsory in the upper forms In 1851, were extended to the whole school in 1855; while English history and literature began to be especially studied about 1869. The number of boys is about 600. The principal buildings are modern, including the chapel (1857), the library (1863), named after the eminent headmaster Dr Charles John Vaughan, and the speech-room (1877), the scene of the brilliant ceremony on "Speech Day" each summer term. The fourth form room, however, dates from 1611, and on its panels are cut the names of many eminent *alumni*, such as Byron, Robert Peel, R. B. Sheridan and Temple (Lord Palmerston). Several of the buildings were erected out of the Lyon Tercentenary Fund, subscribed after the tercentenary celebration in 1871.

A considerable extension of Harrow as an outer residential suburb of London has taken place north of the hill, where is the urban district of Wealdstone (pop. 5901), and there are also important printing and photographic works.

HARRY THE MINSTREL, or Blind Harry (fl. 1470-1492), author of the Scots historical poem *The Actis and Deidis of the Illustere and Vailzeand Campioun Schir William Wallace, Knicht of Ellerslie*, flourished in the latter half of the 15th century. The details of his personal history are of the scantiest. He appears to have been a blind Lothian man, in humble circumstances, who had some reputation as a story-teller, and who received, on five occasions, in 1490 and 1491, gifts from James IV. The entries of these, in the *Accounts of the Lord High Treasurer*, occur among others to harpers and singers. He is alluded to by Dunbar (*q.v.*) in the fragmentary *Interlude of the Droichis Part of the Play*, where a "droich," or dwarf, personates

> "the nakit blynd Harry
> That lang has bene in the fary
> Farleis to find;"

and again in Dunbar's *Lament for the Makaris*. John Major (*q.v.*) in his Latin *History* speaks of "one Henry, blind from his birth, who, in the time of my childhood, fashioned a whole book about William Wallace, and therein wrote down in our popular verse—and this was a kind of composition in which he had much skill—all that passed current among the people in his day. I, however, can give but partial credence to these writings. This Henry used to recite his tales before nobles, and thus received food and clothing as his reward" (Bk. iv. ch. xv.).

The poem (preserved in a unique MS., dated 1488, in the Advocates' library, Edinburgh) is divided into eleven books and runs to 11,853 lines. Its poetic merits are few, and its historical accuracy is easily impugned. It has the formal interest of being one of the earliest, certainly one of the most extensive verse-documents in Scots written in five-accent, or heroic, couplets. It is also the earliest outstanding work which discloses that habit of Scotticism which took such strong hold of the popular Northern literature during the coming years of conflict with England. In this respect it is in marked contrast with all the patriotic verse of preceding and contemporary literature. This attitude of the *Wallace* may perhaps be accepted as corroborative evidence of the humble milieu and popular sentiment of its author. The poem owed its subsequent widespread reputation to its appeal to this sentiment rather than to its literary quality. On the other hand, there are elements in the poem which show that it is not entirely the work of a poor crowder; and these (notably references to historical and literary authorities, and occasional reminiscences of the literary tricks of the Scots Chaucerian school) have inclined some to the view that the text, as we have it, is an edited version of the minstrel's rough song-story. It has been argued, though by no means conclusively, that the "editor" was John Ramsay, the scribe of the Edinburgh MS. and of the companion Edinburgh MS. of the *Brus* by John Barbour (*q.v.*).

> The poem appears, on the authority of Laing, to have been printed at the press of Chepman & Myllar about 1508, but the fragments which Laing saw are not extant. The first complete edition, now available, was printed by Lekprevik for Henry Charteris in 1570 (Brit. Museum). It was reprinted by Charteris in 1594 and 1601, and by Andro Hart in 1611 and 1620. At least six other editions appeared in the 17th century. There are many later reprints, including some of William Hamilton of Gilbertfield's modern Scots version of 1722. The first critical edition was prepared by Dr. Jamieson and published in 1820. In 1889 the Scottish Text Society completed their

edition of the text, with prolegomena and notes by James Moir.

See, in addition to Jamieson's and Moir's volumes (*u.s.*), J. T. T. Brown's *The Wallace and the Bruce Restudied* (Bonner, *Beiträge zur Anglistik*, vi., 1900), a plea for Ramsay's authorship of the known text; also W. A. Craigie's article in *The Scottish Review* (July 1903), a comparative estimate of the *Brus and Wallace*, in favour of the latter.

HARSDÖRFFER, GEORG PHILIPP (1607-1658), German poet, was born at Nuremberg on the 1st of November 1607. He studied law at Altdorf and Strassburg, and subsequently travelled through Holland, England, France and Italy. His knowledge of languages gained for him the appellation "the learned," though he was as little a learned man as he was a poet. As a member of the *Fruchtbringende Gesellschaft* he was called *der Spielende* (the player). Jointly with Johann Klaj (*q.v.*) he founded in 1644 at Nuremberg the order of the Pegnitzschäfer, a literary society, and among the members thereof he was known by the name of Strephon. He died at Nuremberg on the 22nd of September 1658. His writings in German and Latin fill fifty volumes, and a selection of his poems, interesting mostly for their form, is to be found in Müller's *Bibliothek deutscher Dichter des 17ten Jahrhunderts*, vol. ix. (Leipzig, 1826).

His life was written by Widmann (Altdorf, 1707). See also Tittmann, *Die Nürnberger Dichterschule* (Göttingen, 1847); Hodermann, *Eine vornehme Gesellschaft, nach Harsdörffers "Gesprächspielen"* (Paderborn, 1890); T. Bischoff, "Georg Philipp Harsdörffer" in the *Festschrift zur 250 jährigen Jubelfeier des Pegnesischen Blumenordens* (Nuremberg, 1894); and Krapp, *Die ästhetischen Tendenzen Harsdörffers* (Berlin, 1904).

HARSHA, or HARSHAVARDHANA (fl. A.D. 606-648), an Indian king who ruled northern India as paramount monarch for over forty years. The events of his reign are related by Hsüan Tsang, the Chinese pilgrim, and by Bana, a Brahman author. He was the son of a raja of Thanesar, who gained prominence by successful wars against the Huns, and came to the throne in A.D. 606, though he was only crowned in 612. He devoted himself to a scheme of conquering the whole of India, and carried on wars for thirty years with success, until (A.D. 620) he came in contact with Pulakesin II., the greatest of the Chalukya dynasty, who made himself lord of the south, as Harsha was lord of the north. The Nerbudda river formed the boundary between the two empires. In the latter years of his reign Harsha's sway over the whole basin of the Ganges from the Himalayas to the Nerbudda was undisputed. After thirty-seven years of war he set himself to emulate Asoka and became a patron of art and literature. He was the last native monarch who held paramount power in the north prior to the Mahommedan conquest; and was succeeded by an era of petty states.

See Bana, *Sri-harsha-charita*, trans. Cowell and Thomas (1897); Ettinghausen, *Harsha Vardhana* (Louvain, 1906).

HARSNETT, SAMUEL (1561-1631), English divine, archbishop of York, was born at Colchester in June 1561, and was educated at Pembroke Hall, Cambridge, where he was successively scholar, fellow and master (1605-1616). He was also vice-chancellor of the university in 1606 and 1614. His ecclesiastical career began somewhat unpromisingly, for he was censured by Archbishop Whitgift for Romanist tendencies in a sermon which he preached against predestination in 1584. After holding the living of Chigwell (1597-1605) he became chaplain to Bancroft (then bishop of London), and afterwards archdeacon of Essex (1603-1609), rector of Stisted and bishop of Chichester (1609-1619) and archbishop of York (1629). He died on the 25th of May 1631. Harsnett was no favourite with the Puritan community, and Charles I. ordered his *Considerations for the better Settling of Church Government* (1629) to be circulated among the bishops. His *Declaration of Egregious Popish Impostures* (1603) furnished Shakespeare with the names of the spirits mentioned by Edgar in *King Lear*.

HART, ALBERT BUSHNELL (1854-), American historian, was born at Clarksville, Mercer county, Pennsylvania, on the 1st of July 1854. He graduated at Harvard College in 1880, studied at Paris, Berlin and Freiburg, and received the degree of Ph.D. at Freiburg in 1883. He was instructor in history at Harvard in 1883-1887, assistant professor in 1887-1897, and became professor in 1897. Among his writings are: *Introduction to the Study of Federal Government* (1890), *Formation of the Union* (1892, in the Epochs of American History series), *Practical Essays on American Government* (1893), *Studies in American Education* (1895), *Guide to the Study of American History* (with Edward Channing, 1897), *Salmon Portland Chase* (1899, in the American Statesman series), *Foundations of American Foreign Policy* (1901), *Actual Government* (1903), *Slavery and Abolition* (1906, the volume in the American Nation series dealing with the period 1831-1841), *National Ideals Historically Traced* (1907), the 26th volume of the American Nation series, and many historical pamphlets and articles. In addition he edited *American History told by Contemporaries* (4 vols., 1898-1901), and *Source Readers in American History* (4 vols., 1901-1903), and two co-operative histories of the United States, the Epochs of American History series (3 small text-books), and, on a much larger scale, the American Nation series (27 vols., 1903-1907); he also edited the American Citizen series.

HART, CHARLES (d. 1683), English actor, grandson of Shakespeare's sister Joan, is first heard of as playing women's parts at the Blackfriars' theatre as an apprentice of Richard Robinson. In the Civil War he was a lieutenant of horse in Prince Rupert's regiment, and after the king's defeat he played surreptitiously at the Cockpit and at Holland House and other noblemen's residences. After the Restoration he is known to have been in 1660 the original Dorante in *The Mistaken Beauty*, adapted from Corneille's *Le Menteur*. In 1663 he went to the Theatre Royal in Killigrew's company, with which he remained until 1682, taking leading parts in Dryden's, Jonson's and Beaumont and Fletcher's plays. He is highly spoken of by contemporaries in such Shakespearian parts as Othello and Brutus. He is often mentioned by Pepys. Betterton praised him, and would not himself play the part of Hotspur until after Hart's retirement. He died in 1683 and was buried on the 20th of August. Hart is said to have been the first lover of Nell Gwyn, and to have trained her for the stage.

HART, ERNEST ABRAHAM (1835-1898), English medical journalist, was born in London on the 26th of June 1835, the son of a Jewish dentist. He was educated at the City of London school, and became a student at St George's hospital. In 1856 he became a member of the Royal College of Surgeons, making a specialty of diseases of the eye. He was appointed ophthalmic surgeon at St Mary's hospital at the age of 28, and occupied various other posts, introducing into ophthalmic practice some modifications since widely adopted. His name, too, is associated with a method of treating popliteal aneurism, which he was the first to use in Great Britain. His real life-work, however, was as a medical journalist, beginning with the *Lancet* in 1857. He was appointed editor of the *British Medical Journal* in 1866. He took a leading part in the exposures which led to the inquiry into the state of London workhouse infirmaries, and to the reform of the treatment of sick poor throughout England, and the Infant Life Protection Act of 1872, aimed at the evils of baby-farming, was largely due to his efforts. The record of his public work covers nearly the whole field of sanitary legislation during the last thirty years of his life. He had a hand in the amendments of the Public Health and of the Medical Acts; in the measures relating to notification of infectious disease, to vaccination, to the registration of plumbers; in the improvement of factory legislation; in the remedy of legitimate grievances of Army and Navy medical officers; in the removal of abuses and deficiencies in crowded barrack schools; in denouncing the sanitary shortcomings of the Indian government, particularly in regard to the prevention of cholera. His work on behalf of the British Medical Association is shown by the increase from 2000 to 19,000 in the number of members, and the growth of the *British Medical Journal* from 20 to 64 pages, during his editorship. From 1872 to 1897 he was chairman of the Association's Parliamentary Bill Committee. He died on the 7th of January 1898. For his second wife he married Alice Marion Rowland, who had herself studied medicine in London and Paris, and was no less interested than her husband in philanthropic reform. She was most active in her encouragement of Irish cottage industries, and was the founder of the Donegal Industrial Fund.

HART, SIR ROBERT, Bart. (1835-), Anglo-Chinese statesman, was born at Milltown, Co. Armagh, on the 20th of February 1835. He was educated at Taunton, Dublin and Belfast, and graduated at Queen's College, Belfast, in 1853. In the following year he received an appointment as student-interpreter in the China consular service, and after serving for a short time at the Ningpo vice-consulate, he was transferred to Canton, where after acting as secretary to the allied commissioners governing the city, he was appointed the local inspector of customs. There he first gained an insight into custom-house work. One effect of the Taiping rebellion was to close the native custom-house at Shanghai; and as the corrupt alternatives proposed by the Chinese were worse than useless, it was arranged by Sir Rutherford Alcock, the British consul, with his French and American colleagues, that they should undertake to collect the duties on goods owned by foreigners entering and leaving the port. Sir T. Wade was appointed to the post of collector in the first instance, and after a short tenure of office was succeeded by Mr H. N. Lay, who held the post until 1863, when he resigned owing to a disagreement with the Chinese government in connexion with the Lay-Osborn fleet. During his tenancy of office the system adopted at Shanghai was applied to the other treaty ports, so that when on Mr Lay's resignation Mr Hart was appointed inspector-general of foreign customs, he found himself at the head of an organization which collected a revenue of upwards of eight million taels per annum at fourteen treaty ports. From the date when Mr Hart took up his duties at Peking, in 1863, he unceasingly devoted the whole of his energies to the work of the department, with the result that the revenue grew from upwards of eight million taels to nearly twenty-seven million, collected at the thirty-two treaty ports, and the customs staff, which in 1864 numbered 200, reached in 1901 a total of 5704. From the first Mr Hart gained the entire confidence of the members of the Chinese government, who were wise enough to recognize his loyal and able assistance. Of all their numerous sources of revenue, the money furnished by Mr Hart was the only certain asset which could be offered as security for Chinese loans. For many years, moreover, it was customary for the British minister, as well as the ministers of other powers, to consult him in every difficulty; and such complete confidence had Lord Granville in his ability and loyalty, that on the retirement of Sir T. Wade he appointed him minister plenipotentiary at Peking (1885). Sir Robert Hart, however—who was made a K.C.M.G. in 1882—recognized the anomalous position in which he would have been placed had he accepted the proposal, and declined the proffered honour. On all disputed points, whether commercial, religious or political, his advice was invariably sought by the foreign ministers and the Chinese alike. Thrice only did he visit Europe between 1863 and 1902, the result of this long comparative isolation, and of his constant intercourse with the Peking officials, being that he learnt to look at events through Chinese spectacles; and his work, *These from the Land of Sinim*, shows how far this affected his outlook. The faith which he put in the Chinese made him

turn a deaf ear to the warnings which he received of the threatening Boxer movement in 1900. To the last he believed that the attacking force would at least have spared his house, which contained official records of priceless value, but he was doomed to see his faith falsified. The building was burnt to the ground with all that it contained, including his private diary for forty years. When the stress came, and he retreated to the British legation, he took an active part in the defence, and spared neither risk nor toil in his exertions. In addition to the administration of the foreign customs service, the establishment of a postal service in the provinces devolved upon him, and after the signing of the protocol of 1901 he was called upon to organize a native customs service at the treaty ports.

The appointment of Sir Robert Hart as inspector-general of the imperial maritime customs secured the interests of European investors in Chinese securities, and helped to place Chinese finance generally on a solid footing. When, therefore, in May 1906 the Chinese government appointed a Chinese administrator and assistant administrator of the entire customs of China, who would control Sir Robert Hart and his staff, great anxiety was aroused. The Chinese government had bound itself in 1896 and 1898 that the imperial maritime customs services should remain as then constituted during the currency of the loan. The British government obtained no satisfactory answer to its remonstrances, and Sir Robert Hart, finding himself placed in a subordinate position after his long service, retired in July 1907. He received formal leave of absence in January 1908, when he received the title of president of the board of customs. Both the Chinese and the British governments from time to time conferred honours upon Sir Robert Hart. By giving him a Red Button, or button of the highest rank, a Peacock's Feather, the order of the Double Dragon, a patent of nobility to his ancestors for three generations, and the title of Junior Guardian of the heir apparent, the Chinese showed their appreciation of his manifold and great services; while under the seal of the British government there were bestowed upon him the orders of C.M.G. (1880), K.C.M.G.(1882), G.C.M.G. (1889), and a baronetcy (1893). He has also been the recipient of many foreign orders. Sir Robert Hart married in 1886 Hester, the daughter of Alexander Bredon, Esq., M.D., of Portadown.

See his life by Julia Bredon (*Sir Robert Hart*, 1909).

HART, WILLIAM (1823-1894), American landscape and cattle painter, was born in Paisley, Scotland, on the 31st of March 1823, and was taken to America in early youth. He was apprenticed to a carriage painter at Albany, New York, and his first efforts in art were in making landscape decorations for the panels of coaches. Subsequently he returned to Scotland, where he studied for three years. He opened a studio in New York in 1853, and was elected an associate of the National Academy of Design in 1857 and an academician in the following year. He was also a member of the American Water Colour Society, and was its president from 1870 to 1873. As one of the group of the Hudson River School he enjoyed considerable popularity, his pictures being in many well-known American collections. He died at Mount Vernon, New York, on the 17th of June 1894.

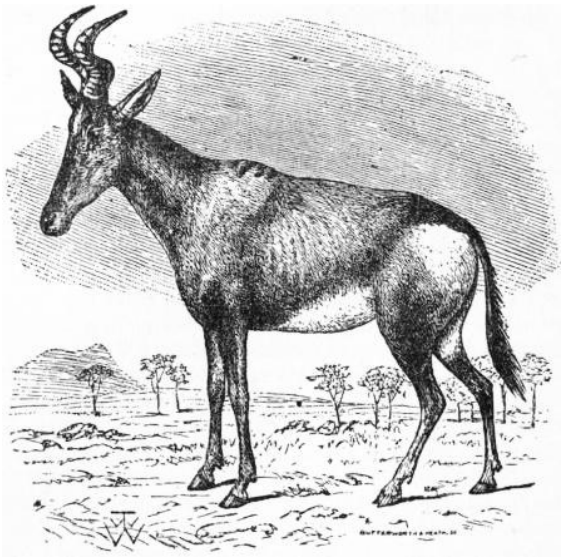
His brother, James McDougal Hart (1828-1901), born in Kilmarnock, Scotland, was also a landscape and cattle painter. He was a pupil of Schirmer in Düsseldorf, and became an associate of the National Academy of Design in 1857 and a full member in 1859. He was survived by two daughters, both figure painters, Letitia B. Hart (b. 1867) and Mary Theresa Hart (b. 1872).

HARTE, FRANCIS BRET (1839-1902), American author, was born at Albany, New York, on the 25th of August 1839. His father, a professor of Greek at the Albany College, died during his boyhood. After a common-school education he went with his mother to California at the age of seventeen, afterwards working in that state as a teacher, miner, printer, express-messenger, secretary of the San Francisco mint, and editor. His first literary venture was a series of *Condensed Novels* (travesties of well-known works of fiction, somewhat in the style of Thackeray), published weekly in *The Californian*, of which he was editor, and reissued in book form in 1867. *The Overland Monthly*, the earliest considerable literary magazine on the Pacific coast, was established in 1868, with Harte as editor. His sketches and poems, which appeared in its pages during the next few years, attracted wide attention in the eastern states and in Europe.

Bret Harte was an early master of the short story, and his Californian tales were regarded as introducing a new *genre* into fiction. "The Luck of Roaring Camp" (1868), "The Outcasts of Poker Flat" (1869), the later sketch "How Santa Claus came to Simpson's Bar," and the verses entitled "Plain Language from Truthful James," combined humour, pathos and power of character portrayal in a manner that indicated that the new land of mining-gulches, gamblers, unassimilated Asiatics, and picturesque and varied landscape had found its best delineator; so that Harte became, in his pioneer pictures, a sort of later Fenimore Cooper. Forty-four volumes were published by him between 1867 and 1898. After a year as professor in the university of California, Harte lived in New York, 1871-1878; was United States consul at Crefeld, Germany, 1878-1880; consul at Glasgow, 1880-1885; and after 1885 resided in London, engaged in literary work. He died at Camberley, England, on the 5th of May 1902.

A library edition of his *Writings* (16 vols.) was issued in 1900, and increased to 19 vols. in 1904. See also H. W. Boynton, *Bret Harte* (1905) in the Contemporary Men of Letters series; T. E. Pemberton, *Life of Bret Harte* (1903), which contains a list of his poems, tales, &c.

HARTEBEEST, the Boer name for a large South African antelope (also known as caama) characterized by its red colour, long face with naked muzzle and sharply angulated lyrate horns, which are present in both sexes. This antelope is the *Bubalis cama* or *Alcelaphus cama* of naturalists; but the name hartebeest has been extended to include all the numerous members of the same genus, some of which are to be found in every part of Africa, while one or two extend into Syria. Some of the species of the allied genus *Damaliscus*, such as Hunter's antelope (*D. hunteri*), are also often called hartebeests. (See ANTELOPE).



Cape Hartebeest (*Bubalis cama*).

HARTFORD, a city and the capital of Connecticut, U.S.A., the county-seat of Hartford county, and a port of entry, coterminous with the township of Hartford, in the west central part of the state, on the W. bank of the Connecticut river, and about 35 m. from Long Island Sound. Pop. (1890), 53,230; (1900), 79,850, of whom 23,758 were foreign-born (including 8076 Irish, 2700 Germans, 2260 Russians, 1952 Italians, 1714 Swedes, 1634 English and 1309 English Canadians); (1910 census) 98,915. Of the total population in 1900, 43,872 were of foreign parentage (both parents foreign-born), and of these 18,410 were of Irish parentage. Hartford is served by two divisions of the New York, New Haven & Hartford railway, by the Central New England railway, by the several electric lines of the Connecticut Company which radiate to the surrounding towns, and by the steamboats of the Hartford & New York Transportation Co., all of which are controlled by the N.Y., N.H. & H. The river, which is navigable to this point, is usually closed from the middle of December to the middle of March.

The city covers an area of 17.7 sq. m.; it is well laid out and compactly built, and streets, parks, &c., are under a city-plan commission authorized in 1907. It is intersected by the sluggish Park river, which is spanned by ten bridges. A stone arch bridge, with nine arches, built of granite at a cost of $1,700,000 and dedicated in 1908, spans the Connecticut (replacing the old Connecticut river bridge built in 1818 and burned in 1895), and connects Hartford with the village of East Hartford in the township of East Hartford (pop. 1900, 6406), which has important paper-manufacturing and tobacco-growing interests. The park system of Hartford is the largest in any city of the United States in proportion to the city's population. In 1908 there were 21 public parks, aggregating more than 1335 acres. In the extreme S. of the city is Goodwin Park (about 200 acres); in the S.E. is Colt Park (106 acres), the gift of Mrs Elizabeth Colt, the widow of Samuel Colt, inventor of the Colt revolver; in the S.W. is Pope Park (about 90 acres); in the W. is Elizabeth (100 acres); in the E., along the Connecticut river front, is Riverside (about 80 acres); and in the extreme N. is Keney Park (680 acres), the gift of Henry Keney, and, next to the Metropolitan Reservations near Boston, the largest park in the New England states. Near the centre of the city are the Capitol Grounds (27 acres; until 1872 the campus of Trinity College) and Bushnell Park (41 acres), adjoining Capitol Park. Bushnell Park, named in honour of Horace Bushnell, contains the Corning Memorial Fountain, erected in 1899 and designed by J. Massey Rhind, and three bronze statues, one, by J. Q. A. Ward, of General Israel Putnam; one, by Truman H. Bartlett, of Dr Horace Wells (1815-1848), the discoverer of anaesthesia; and one, by E. S. Woods, of Colonel Thomas Knowlton (1749-1776), a patriot soldier of the War of Independence, killed at the battle of Harlem Heights. On the Capitol Grounds is the state capitol (Richard M. Upjohn, architect), a magnificent white marble building, which was completed in 1880 at a cost of $2,534,000. Its exterior is adorned with statues and busts of Connecticut statesmen and carvings of scenes in the history of the state. Within the building are regimental flags of the Civil War, a bronze statue by Olin L. Warner of Governor William A. Buckingham, a bronze statue by Karl Gerhardt of Nathan Hale, a bronze tablet (also by Karl Gerhardt) in memory of John Fitch (1743-1798), the inventor; a portrait of Washington, purchased by the state in 1800 from the artist, Gilbert Stuart; and a series of oil portraits of the colonial and state governors. The elaborately carved chair of the lieutenant-governor in the senate chamber, made of wood from the historic Charter Oak, and the original charter of 1662 (or its duplicate of the same date) are preserved in a special vault in the Connecticut state library. A new state library and supreme court building and a new state armoury and arsenal, both of granite, have been (1910) erected upon lands recently added to the Capitol Grounds, thus forming a group of state buildings with the Capitol as the centre. Near the Capitol, at the approach of the memorial bridge across the Park river, is the Soldiers' and Sailors' memorial arch, designed by George Keller and erected by the city in 1885 in memory of the Hartford soldiers and sailors who served in the American Civil War.

Near the centre of the city is the old town square (now known as the City Hall Square), laid off in 1637. Here, facing Main Street, stands the city hall, a beautiful example of Colonial architecture, which was designed by

Charles Bulfinch, completed in 1796, and until 1879 used as a state capitol; it has subsequently been restored. In Main Street is the present edifice of the First Church of Christ, known as the Centre Congregational Church, which was organized in Cambridge, Massachusetts, in 1632, and removed to Hartford, under the leadership of Thomas Hooker and Samuel Stone, in 1636. In the adjoining cemetery are the graves of Thomas Hooker, Governor William Leete (1603-1683), and Governor John Haynes, and a monument in memory of 100 early residents of Hartford. In the same thoroughfare is the Wadsworth Atheneum (built in 1842; enlarged in 1892-1893 and 1907) and its companion buildings, the Colt memorial (built in 1908 to accommodate the Elizabeth Colt art collection) and the Morgan art gallery (built in 1908 by J. Pierpont Morgan in memory of his father, Junius Morgan, a native of Hartford). In this group of buildings are the Hartford public library (containing 90,000 volumes in 1908), the Watkinson library of reference (70,000 volumes in 1908), the library of the Connecticut historical society (25,000 volumes in 1908) and a public art gallery. Other institutions of importance in Hartford are the American school for the deaf (formerly the American asylum for the deaf and dumb), founded in 1816 by Thomas H. Gallaudet; the retreat for the insane (opened for patients in 1824); the Hartford hospital; St Francis hospital; St Thomas's seminary (Roman Catholic); La Salette Missionary college (R.C.; 1898); Trinity college (founded by members of the Protestant Episcopal church, and now non-sectarian), which was chartered as Washington College in 1823, opened in 1824, renamed Trinity College in 1845, and in 1907-1908 had 27 instructors and 208 students; the Hartford Theological seminary, a Congregational institution, which was founded at East Windsor Hill in 1834 as the Theological Institute of Connecticut, was removed to Hartford in 1865, and adopted its present name in 1885; and, affiliated with the last mentioned institution, the Hartford School of Religious Pedagogy. The Hartford grammar school, founded in 1638, long managed by the town and in 1847 merged with the classical department of the Hartford public high school, is the oldest educational institution in the state. In Farmington Avenue is St Joseph's cathedral (Roman Catholic), the city being the seat of the diocese of Hartford.

During the 18th century Hartford enjoyed a large and lucrative commerce, but the railway development of the 19th century centralized commerce in New York and Boston, and consequently the principal source of the city's wealth has come to be manufacturing and insurance. In 1905 the total value of the "factory" product was $25,975,651. The principal industries are the manufacture of small arms (by the Colt's Patent Fire-Arms Manufacturing Co., makers of the Colt revolver and the Gatling gun), typewriters (Royal and Underwood), automobiles, bicycles, cyclometers, carriages and wagons, belting, cigars, harness, machinists' tools and instruments of precision, coil-piping, church organs, horse-shoe nails, electric equipment, machine screws, drop forgings, hydrants and valves, and engines and boilers. In 1788 the first woollen mill in New England was opened in Hartford; and here, too, about 1846, the Rogers process of electro-silver plating was invented. The city is one of the most important insurance centres in the United States. As early as 1794 policies were issued by the Hartford Fire Insurance Company (chartered in 1810). In 1909 Hartford was the home city of six fire insurance and six life insurance companies, the principal ones being the Aetna (fire), Aetna Life, Phoenix Mutual Life, Phoenix Fire, Travelers (Life and Accident), Hartford Fire, Hartford Life, National Fire, Connecticut Fire, Connecticut General Life and Connecticut Mutual Life. In 1906 the six fire insurance companies had an aggregate capital of more than $10,000,000; on the 1st January 1906 they reported assets of about $59,000,000 and an aggregate surplus of $30,000,000. In the San Francisco disaster of that year they paid more than $15,000,000 of losses. Since the fire insurance business began in Hartford, the companies of that city now doing business there have paid about $340,000,000 in losses. Several large and successful foreign companies have made Hartford their American headquarters. The life insurance companies have assets to the value of about $225,000,000. The Aetna (fire), Aetna Life, Connecticut Fire, Connecticut Mutual Life, Connecticut General Life, Hartford Fire, Hartford Life, Hartford Steam Boiler Inspection and Insurance Co., National Fire, Orient Fire, Phoenix Mutual Life and Travelers companies have their own homes, some of these being among the finest buildings in Hartford. The city has also large banking interests.

The first settlement on the site of Hartford was made by the Dutch from New Amsterdam, who in 1633 established on the bank of the Connecticut river, at the mouth of the Park river, a fort which they held until 1654. The township of Hartford was one of the first three original townships of Connecticut. The first English settlement was made in 1635 by sixty immigrants, mostly from New Town (now Cambridge), Massachusetts; but the main immigration was in 1636, when practically all the New Town congregation led by Thomas Hooker and Samuel Stone joined those who had preceded them. Their settlement was called Newtown until 1637, when the present name was adopted from Hertford, England, the birthplace of Stone. In 1636 Hartford was the meeting-place of the first general court of the Connecticut colony; the Fundamental Orders, the first written constitution, were adopted at Hartford in 1639; and after the union of the colonies of New Haven and Connecticut, accomplished by the charter of 1662, Hartford became the sole capital: but from 1701 until 1873 that honour was shared with New Haven. At Hartford occurred in 1687 the meeting of Edmund Andros and the Connecticut officials (see Connecticut). Hartford was first chartered in 1784, was rechartered in 1856 (the charter of that date has been subsequently revised), and in 1881 was made coterminous with the township of Hartford. The city was the literary centre of Federalist ideas in the latter part of the 18th century, being the home of Lemuel Hopkins, John Trumbull, Joel Barlow and David Humphreys, the leading members of a group of authors known as the "Hartford Wits"; and in 1814-1815 the city was the meeting-place of the famous Hartford Convention, an event of great importance in the history of the Federalist party. The War of 1812, with the Embargo Acts (1807-1813), which were so destructive of New England's commerce, thoroughly aroused the Federalist leaders in this part of the country against the National government as administered by the Democrats, and in 1814, when the British were not only threatening a general invasion of their territory but had actually occupied a part of the Maine coast, and the National government promised no protection, the legislature of Massachusetts invited the other New England states to join with her in sending delegates to a convention which should meet at Hartford to consider their grievances, means of preserving their resources, measures of protection against the British, and the advisability of taking measures to bring about a convention of delegates from all the United States for the purpose of revising the Federal constitution. The legislatures of Connecticut and Rhode Island, and town meetings in Cheshire and Grafton counties (New Hampshire) and in Windham county (Vermont) accepted the invitation, and the convention, composed of 12 delegates from Massachusetts, 7 from Connecticut, 4 from Rhode Island, 2 from New Hampshire and 1 from Vermont, all Federalists, met on the 15th of December 1814, chose George Cabot of Massachusetts president and Theodore Dwight of Connecticut secretary, and remained in secret session until the 5th of January 1815, when it adjourned *sine die*. At the conclusion of its work it recommended greater military control for each of the several states and that the Federal constitution be so amended that representatives and direct taxes should be apportioned among the several states "according to their respective numbers of free

persons," that no new state should be admitted to the Union without the concurrence of two-thirds of both Houses of Congress, that Congress should not have the power to lay an embargo for more than sixty days, that the concurrence of two-thirds of the members of both Houses of Congress should be necessary to pass an act "to interdict the commercial intercourse between the United States and any foreign nation or the dependencies thereof" or to declare war against any foreign nation except in case of actual invasion, that "no person who shall hereafter be naturalized shall be eligible as a member of the Senate or House of Representatives of the United States, nor capable of holding any civil office under the authority of the United States," and that "the same person shall not be elected president of the United States a second time; nor shall the president be elected from the same state two terms in succession." After making these recommendations concerning amendments the Convention resolved: "That if the application of these states to the government of the United States, recommended in a foregoing resolution, should be unsuccessful, and peace should not be concluded, and the defence of these states should be neglected, as it has been since the commencement of the war, it will, in the opinion of this convention, be expedient for the legislatures of the several states to appoint delegates to another convention, to meet at Boston in the state of Massachusetts on the third Thursday of June next, with such powers and instructions as the exigency of a crisis so momentous may require." The legislatures of Massachusetts and Connecticut approved of these proposed amendments and sent commissioners to Washington to urge their adoption, but before their arrival the war had closed, and not only did the amendments fail to receive the approval of any other state, but the legislatures of nine states expressed their disapproval of the Hartford Convention itself, some charging it with sowing "seeds of dissension and disunion." The cessation of the war brought increased popularity to the Democratic administration, and the Hartford Convention was vigorously attacked throughout the country.

Hartford was the birthplace of Noah Webster, who here published his *Grammatical Institute of the English Language* (1783-1785), and of Henry Barnard, John Fiske and Frederick Law Olmsted, and has been the home of Samuel P. Goodrich (Peter Parley), George D. Prentice, Harriet Beecher Stowe, Charles Dudley Warner, Samuel L. Clemens (Mark Twain) and Horace Bushnell. More than 100 periodicals have been established in Hartford, of which the oldest is the *Hartford Courant* (1764), the oldest newspaper in the United States. This paper was very influential in shaping public opinion in the years preceding the War of Independence; after the war it was successively Federalist, Whig and Republican. *The Times* (semi-weekly 1817; daily 1841) was one of the most powerful Democratic organs in the period before the middle of the 19th century, and had Gideon Wells for editor 1826-1836. The *Congregationalist* (afterwards published in Boston) and the *Churchman* (afterwards published in New York) were also founded at Hartford.

See *Scaeva, Hartford in the Olden Times: Its First Thirty Years* (Hartford, 1853), edited by W. M. B. Hartley; and J. H. Trumbull, *Memorial History of Hartford County* (Boston, 1886). For the Hartford Convention see *History of the Hartford Convention* (Boston, 1833), published by its secretary, Theodore Dwight; H. C. Lodge, *Life and Letters of George Cabot* (Boston, 1877); and Henry Adams, *Documents Relating to New England Federalism* (Boston, 1877).

HARTFORD CITY, a city and the county-seat of Blackford county, Indiana, U.S.A., 62 m. N.E. of Indianapolis. Pop. (1890) 2287; (1900) 5912 (572 foreign-born); (1910) 6187. The city is served by the Fort Wayne, Cincinnati & Louisville, and the Pittsburg, Cincinnati, Chicago & St Louis railways, and the Indiana Union Traction line (electric). There are oil and natural gas wells in the vicinity, and the city has pulp and paper mills, glass and tile works, and manufactories of woodenware, and nitro-glycerine and powder. The municipality owns and operates its water-works system. The first settlement in the vicinity was made in 1832. Hartford City became the county-seat of Blackford county when that county was erected in 1837; it was laid out in 1839 and was first incorporated as a town in 1867.

HARTIG, GEORG LUDWIG (1764-1837), German agriculturist and writer on forestry, was born at Gladenbach, near Marburg, on the 2nd of September 1764. After obtaining a practical knowledge of forestry at Harzburg, he studied from 1781 to 1783 at the university of Giessen. In 1786 he became manager of forests to the prince of Solms-Braunfels at Hungen in the Wetterau, where he founded a school for the teaching of forestry. After obtaining in 1797 the appointment of inspector of forests to the prince of Orange-Nassau, he continued his school of forestry at Dillenburg, where the attendance thereat increased considerably. On the dissolution of the principality by Napoleon I. in 1805 he lost his position, but in 1806 he went as chief inspector of forests to Stuttgart, whence in 1811 he was called to Berlin in a like capacity. There he continued his school of forestry, and succeeded in connecting it with the university of Berlin, where in 1830 he was appointed an honorary professor. He died at Berlin on the 2nd of February 1837. His son Theodor (1805-1880), and grandson Robert (1839-1901), were also distinguished for their contributions to the study of forestry.

G. L. Hartig was the author of a number of valuable works: *Lehrbuch für Jäger* (Stuttgart, 1810); *Lehrbuch für Förster* (3 vols., Stuttgart, 1808); *Kubiktabellen für geschnittene, beschlagene, und runde Hölzer* (1815, 10th ed. Berlin, 1871); and *Lexikon für Jäger und Jagdfreunde* (1836, 2nd ed. Berlin, 1859-1861). Theodor Hartig and his son Robert also published numerous works dealing with forestry, one of the latter's books being translated into English by W. Somerville and H. Marshall Ward as *Diseases of Trees* (1894).

HARTLEPOOL, a parliamentary borough of Durham, England, embracing the municipal borough of Hartlepool or East Hartlepool and the municipal and county borough of West Hartlepool. Pop. (1901) of Hartlepool, 22,723; of West Hartlepool, 62,627. The towns are on the coast of the North Sea separated by Hartlepool Bay, with a harbour, and both have stations on branches of the North Eastern railway, 247 m. N. by W. from London. The surrounding country is bleak, and the coast is low. Caves occur in the slight cliffs, and protection against the attacks of the waves has been found necessary. The ancient market town of Hartlepool lies on a peninsula which forms the termination of a south-eastward sweep of the coast and embraces the bay. Its naturally strong position was formerly fortified, and part of the walls, serving as a promenade, remain. The parish church of St Hilda, standing on an eminence above the sea, is late Norman and Early English, with a massive tower, heavily buttressed. There is a handsome borough hall in Italian style. West Hartlepool, a wholly modern town, has several handsome modern churches, municipal buildings, exchange, market hall, Athenaeum and public library. The municipal area embraces the three townships of Seaton Carew, a seaside resort with good bathing, and golf links; Stranton, with its church of All Saints, of the 14th century, on a very early site; and Throston.

The two Hartlepools are officially considered as one port. The harbour, which embraces two tidal basins and six docks aggregating 83½ acres, in addition to timber docks of 57 acres, covers altogether 350 acres. There are five graving docks, admitting vessels of 550 ft. length and 10 to 21 ft. draught. The depth of water on the dock sills varies from 17½ ft. at neap tides to 25 ft. at spring tides. A breakwater three-quarters of a mile long protects the entrance to the harbour. An important trade is carried on in the export of coal, ships, machinery, iron and other metallic ores, woollens and cottons, and in the import of timber, sugar, iron and copper ores, and eggs. Timber makes up 59% of the imports, and coal and ships each about 30% of the exports. The principal industries are shipbuilding (iron), boiler and engineering works, iron and brass foundries, steam saw and planing mills, flour-mills, paper and paint factories, and soapworks.

The parliamentary borough (falling within the south-east county division) returns one member. The municipal borough of Hartlepool is under a mayor, 6 aldermen and 18 councillors, and has an area of 972 acres. The municipal borough of West Hartlepool is under a mayor, 8 aldermen and 24 councillors, and has an area of 2684 acres.

Built on the horns of a sheltered bay, Hartlepool (Hertepull, Hertipol), grew up round the monastery founded there in 640, but was destroyed by the Danes in 800 and rebuilt by Ecgred, bishop of Lindisfarne. In 1173 Bishop Hugh de Puiset allowed French and Flemish troops to land at Hartlepool to aid the Scots. It is not mentioned in Boldon Book as, being part of the royal manor of Sadberg held at this time by the family of Bruce, it did not become the property of the see of Durham until the purchase of that manor in 1189. The bishops did not obtain possession until the reign of John, who during the interval in 1201 gave Hartlepool a charter granting the burgesses the same privileges that the burgesses of Newcastle enjoyed; in 1230 Bishop Richard Poor granted further liberties, including a gild merchant. Edward II. seized the borough as a possession of Robert Bruce, but he could control it very slightly owing to the bishop’s powers. In 1328 Edward III. granted the borough 100 marks towards the town-wall and Richard II. granted murage for seven years, the term being extended in 1400. In 1383 Bishop Fordham gave the burgesses licence to receive tolls within the borough for the maintenance of the walls, while Bishop Neville granted a commission for the construction of a pier or mole. In the 16th century Hartlepool was less prosperous; in 1523 the haven was said to be ruined, the fortifications decayed. An act of 1535 declared Hartlepool to be in Yorkshire, but in 1554 it was reinstated in the county of Durham. It fell into the hands of the northern earls in 1563, and a garrison was maintained there after the rebellion was crushed. In 1593 Elizabeth incorporated it, and gave the burgesses a town hall and court of pie powder. During the civil wars Hartlepool, which a few years before was said to be the only port town in the country, was taken by the Scots, who maintained a garrison there until 1647. As a borough of the Palatinate Hartlepool was not represented in parliament until the 19th century, though strong arguments in its favour were advanced in the Commons in 1614. The markets of Hartlepool were important throughout the middle ages. In 1216 John confirmed to Robert Bruce the market on Wednesday granted to his father and the fair on the feast of St Lawrence; this fair was extended to fifteen days by the grant of 1230, while the charter of 1595 also granted a fair and market. During the 14th century trade was carried on with Germany, Spain and Holland, and in 1346 Hartlepool provided five ships for the French war, being considered one of the chief seaports in the kingdom. The markets were still considerable in Camden’s day, but declined during the 18th century, when Hartlepool became fashionable as a watering-place.

HARTLEY, SIR CHARLES AUGUSTUS (1825-), English engineer, was born in 1825 at Heworth, Durham. Like most engineers of his generation he was engaged in railway work in the early part of his career, but subsequently he devoted himself to hydraulic engineering and the improvement of estuaries and harbours for the purposes of navigation. He was employed in connexion with some of the largest and most important waterways of the world. After serving in the Crimea as a captain of engineers in the Anglo-Turkish contingent, he was in 1856 appointed engineer-in-chief for the works carried out by the European Commission of the Danube for improving the navigation at the mouths of that river, and that position he retained till 1872, when he became consulting engineer to the Commission (see Danube). In 1875 he was one of the committee appointed by the authority of the U.S.A. Congress to report on the works necessary to form and maintain a deep channel through the south pass of the Mississippi delta; and in 1884 the British government nominated him a member of the international technical commission for widening the Suez Canal. In addition he was consulted by the British and other governments in connexion with many other river and harbour works, including the improvement of the navigation of the Scheldt, Hugli, Don and Dnieper, and of the ports of Odessa, Trieste, Kustendjie, Burgas, Varna and Durban. He was knighted in 1862, and became K.C.M.G. in 1884.

HARTLEY, DAVID (1705-1757), English philosopher, and founder of the Associationist school of psychologists, was born on the 30th of August 1705. He was educated at Bradford grammar school and Jesus College, Cambridge, of which society he became a fellow in 1727. Originally intended for the Church, he was deterred from taking orders by certain scruples as to signing the Thirty-nine Articles, and took up the study of medicine. Nevertheless, he remained in the communion of the English Church, living on intimate terms with the most distinguished churchmen of his day. Indeed he asserted it to be a duty to obey ecclesiastical as well as civil authorities. The doctrine to which he most strongly objected was that of eternal punishment. Hartley practised as a physician at Newark, Bury St Edmunds, London, and lastly at Bath, where he died on the 28th of August 1757. His *Observations on Man* was published in 1749, three years after Condillac's *Essai sur l'origine des connaissances humaines*, in which theories essentially similar to his were expounded. It is in two parts—the first dealing with the frame of the human body and mind, and their mutual connexions and influences, the second with the duty and expectations of mankind. His two main theories are the doctrine of vibrations and the doctrine of associations. His physical theory, he tells us, was drawn from certain speculations as to nervous action which Newton had published in his *Principia*. His psychological theory was suggested by the *Dissertation concerning the Fundamental Principles of Virtue or Morality*, which was written by a clergyman named John Gay (1699-1745), and prefixed by Bishop Law to his translation[1] of Archbishop King's Latin work on the *Origin of Evil*, its chief object being to show that sympathy and conscience are developments by means of association from the selfish feelings.

The outlines of Hartley's theory are as follows. With Locke he asserted that, prior to sensation, the human mind is a blank. By a growth from simple sensations those states of consciousness which appear most remote from sensation come into being. And the one law of growth of which Hartley took account was the law of contiguity, synchronous and successive. By this law he sought to explain, not only the phenomena of memory, which others had similarly explained before him, but also the phenomena of emotion, of reasoning, and of voluntary and involuntary action (see ASSOCIATION OF IDEAS).

By his physical theory Hartley gave the first strong impulse to the modern study of the intimate connexion of physiological and psychical facts which has proved so fruitful, though his physical theory in itself is inadequate, and has not been largely adopted. He held that sensation is the result of a vibration of the minute particles of the medullary substance of the nerves, to account for which he postulated, with Newton, a subtle elastic ether, rare in the interstices of solid bodies and in their close neighbourhood, and denser as it recedes from them. Pleasure is the result of moderate vibrations, pain of vibrations so violent as to break the continuity of the nerves. These vibrations leave behind them in the brain a tendency to fainter vibrations or "vibratiuncles" of a similar kind, which correspond to "ideas of sensation." Thus memory is accounted for. The course of reminiscence and of the thoughts generally, when not immediately dependent upon external sensation, is accounted for on the ground that there are always vibrations in the brain on account of its heat and the pulsation of its arteries. What these vibrations shall be is determined by the nature of each man's past experience, and by the influence of the circumstances of the moment, which causes now one now another tendency to prevail over the rest. Sensations which are often associated together become each associated with the ideas corresponding to the others; and the ideas corresponding to the associated sensations become associated together, sometimes so intimately that they form what appears to be a new simple idea, not without careful analysis resolvable into its component parts.

Starting, like the modern Associationists, from a detailed account of the phenomena of the senses, Hartley tries to show how, by the above laws, all the emotions, which he analyses with considerable skill, may be explained. Locke's phrase "association of ideas" is employed throughout, "idea" being taken as including every mental state but sensation. He emphatically asserts the existence of pure disinterested sentiment, while declaring it to be a growth from the self-regarding feelings. Voluntary action is explained as the result of a firm connexion between a motion and a sensation or "idea," and, on the physical side, between an "ideal" and a motory vibration. Therefore in the Freewill controversy Hartley took his place as a determinist. It is singular that, as he tells us, it was only with reluctance, and when his speculations were nearly complete, that he came to a conclusion on this subject in accordance with his theory.

See life of Hartley by his son in the 1801 edition of the *Observations*, which also contains notes and additions translated from the German of H. A. Pistorius; Sir Leslie Stephen, *History of English Thought in the Eighteenth Century* (3rd ed., 1902), and article in the *Dictionary of National Biography*; G. S. Bower, *Hartley and James Mill* (1881); B. Schönlank, *Hartley und Priestley die Begründer des Assoziationismus in England* (1882). See also the histories of philosophy and bibliography in J. M. Baldwin's *Dictionary of Philosophy and Psychology* (1905), vol. iii.

1 Anonymously in the 1731 ed., with acknowledgment in the 1758 ed.

HARTLEY, JONATHAN SCOTT (1845-), American sculptor, was born at Albany, New York, on the 23rd of September 1845. He was a pupil of E. D. Palmer, New York, and of the schools of the Royal Academy, London; he later studied for a year in Berlin and for a year in Paris. His first important work (1882) was a statue of Miles Morgan, the Puritan, for Springfield, Mass. Among his other works are the Daguerre monument in Washington; "Thomas K. Beecher," Elmira, New York, and "Alfred the Great," Appellate Court House, New York. He devoted himself particularly to the making of portrait busts, in which he attained high rank. In 1891 he became a member of the National Academy of Design.

HARTLIB, SAMUEL (*c.* 1599-*c.* 1670), English writer on education and agriculturist, was born towards the close of the 16th century at Elbing in Prussia, his father being a refugee merchant from Poland. His mother was the daughter of a rich English merchant at Danzig. About 1628 Hartlib went to England, where he carried on a mercantile agency, and at the same time found leisure to enter with interest into the public questions of the day.

An enthusiastic admirer of Comenius, he published in 1637 his *Conatuum Comenianorum praeludia*, and in 1639 *Comenii pansophiae prodromus et didactica dissertatio*. In 1641 appeared his *Relation of that which hath been lately attempted to procure Ecclesiastical Peace among Protestants*, and *A Description of Macaria*, containing his ideas of what a model state should be. During the civil war Hartlib occupied himself with the peaceful study of agriculture, publishing various works by himself, and printing at his own expense several treatises by others on the subject. In 1652 he issued a second edition of the *Discourse of Flanders Husbandry* by Sir Richard Weston (1645); and in 1651 *Samuel Hartlib, his Legacy, or an Enlargement of the Discourse of Husbandry used in Brabant and Flanders*, by Robert Child. For his various labours Hartlib received from Cromwell a pension of £100, afterwards increased to £300, as he had spent all his fortune on his experiments. He planned a school for the sons of gentlemen, to be conducted on new principles, and this probably was the occasion of his friend Milton's *Tractate on Education*, addressed to him in 1644, and of Sir William Petty's *Two Letters* on the same subject, in 1647 and 1648. At the Restoration Hartlib lost his pension, which had already fallen into arrears; he petitioned parliament for a new grant of it, but what success he met with is unknown, as his latter years and death are wrapped in obscurity. A letter from him is known to have been written in February 1661-1662, and apparently he is referred to by Andrew Marvell as alive in 1670 and fleeing to Holland from his creditors.

A Biographical Memoir of Samuel Hartlib, by H. Dircks, appeared in 1865.

HARTMANN, KARL ROBERT EDUARD VON (1842-1906), German philosopher, was born in Berlin on the 23rd of February 1842. He was educated for the army, and entered the artillery of the Guards as an officer in 1860, but a malady of the knee, which crippled him, forced him to quit the service in 1865. After some hesitation between music and philosophy, he decided to make the latter the serious work of his life, and in 1867 the university of Rostock conferred on him the degree of doctor of philosophy. He subsequently returned to Berlin, and died at Grosslichterfelde on the 5th of June 1906. His reputation as a philosopher was established by his first book, *The Philosophy of the Unconscious* (1869; 10th ed. 1890). This success was largely due to the originality of its title, the diversity of its contents (von Hartmann professing to obtain his speculative results by the methods of inductive science, and making plentiful use of concrete illustrations), the fashionableness of its pessimism and the vigour and lucidity of its style. The conception of the Unconscious, by which von Hartmann describes his ultimate metaphysical principle, is not at bottom as paradoxical as it sounds, being merely a new and mysterious designation for the Absolute of German metaphysicians. The Unconscious appears as a combination of the metaphysic of Hegel with that of Schopenhauer. The Unconscious is both Will and Reason and the absolute all-embracing ground of all existence. Von Hartmann thus combines "pantheism" with "panlogism" in a manner adumbrated by Schelling in his "positive philosophy." Nevertheless Will and not Reason is the primary aspect of the Unconscious, whose melancholy career is determined by the primacy of the Will and the subservience of the Reason. Precosmically the Will is potential and the Reason latent, and the Will is void of reason when it passes from potentiality to actual willing. This latter is absolute misery, and to cure it the Unconscious evokes its Reason and with its aid creates the best of all possible worlds, which contains the promise of its redemption from actual existence by the emancipation of the Reason from its subjugation to the Will in the conscious reason of the enlightened pessimist. When the greater part of the Will in existence is so far enlightened by reason as to perceive the inevitable misery of existence, a collective effort to will non-existence will be made, and the world will relapse into nothingness, the Unconscious into quiescence. Although von Hartmann is a pessimist, his pessimism is by no means unmitigated. The individual's happiness is indeed unattainable either here and now or hereafter and in the future, but he does not despair of ultimately releasing the Unconscious from its sufferings. He differs from Schopenhauer in making salvation by the "negation of the Will-to-live" depend on a collective social effort and not on individualistic asceticism. The conception of a redemption of the Unconscious also supplies the ultimate basis of von Hartmann's ethics. We must provisionally affirm life and devote ourselves to social evolution, instead of striving after a happiness which is impossible; in so doing we shall find that morality renders life less unhappy than it would otherwise be. Suicide, and all other forms of selfishness, are highly reprehensible. Epistemologically von Hartmann is a transcendental realist, who ably defends his views and acutely criticizes those of his opponents. His realism enables him to maintain the reality of Time, and so of the process of the world's redemption.

Von Hartmann's numerous works extend to more than 12,000 pages. They may be classified into—A. Systematical, including *Grundprobleme der Erkenntnistheorie*; *Kategorienlehre*; *Das sittliche Bewusstsein*; *Die Philosophie des Schönen*; *Die Religion des Geistes*; *Die Philosophie des Unbewussten* (3 vols., which now include his, originally anonymous, self-criticism, *Das Unbewusste vom Standpunkte der Physiologie und Descendenztheorie*, and its refutation, Eng. trs. by W. C. Coupland, 1884); *System der Philosophie im Grundriss*, i.; *Grundriss der Erkenntnislehre*. B. Historical and critical—*Das religiöse Bewusstsein der Menschheit*; *Geschichte der Metaphysik* (2 vols.); *Kant's Erkenntnistheorie*; *Kritische Grundlegung des transcendentalen Realismus*; *Über die dialektische Methode*; studies of Schelling, Lotze, von Kirchmann; *Zur Geschichte des Pessimismus*; *Neukantianismus, Schopenhauerismus, Hegelianismus*; *Geschichte der deutschen Ästhetik seit Kant*; *Die Krisis des Christentums in der modernen Theologie*; *Philosophische Fragen der Gegenwart*; *Ethische Studien*; *Moderne Psychologie*; *Das Christentum des neuen Testaments*; *Die Weltanschauung der modernen Physik*, C. Popular—*Soziale Kernfragen*; *Moderne Probleme*; *Tagesfragen*; *Zwei Jahrzehnte deutscher Politik*; *Das Judentum in Gegenwart und Zukunft*; *Die Selbstzersetzung des Christentums*; *Gesammelte Studien*; *Der Spiritismus* and *Die Geisterhypothese des Spiritismus*; *Zur Zeitgeschichte*. His select works have been published in 10 volumes (2nd ed., 1885-1896). On his philosophy see R. Köber, *Das philosophische System Eduard von Hartmanns* (1884); O. Plümacher, *Der Kampf ums Unbewusste* (2nd ed., 1890), with a chronological table of the Hartmann literature from 1868 to 1890; A. Drews, *E. von Hartmanns Philosophie und der Materialismus in der modernen Kultur* (1890) and *E. von Hartmanns philosophisches System im Grundriss* (1902), with biographical introduction; and for further authorities, J. M. Baldwin, *Dictionary of Philosophy and Psychology* (1901-1905).

HARTMANN, MORITZ (1821-1872), German poet and author, was born of Jewish parentage at Duschnik in Bohemia on the 15th of October 1821. Having studied philosophy at Prague and Vienna, he travelled in south Germany, Switzerland and Italy, and became tutor in a family at Vienna. In 1845 he proceeded to Leipzig and there published a volume of patriotic poems, *Kelch und Schwert* (1845). Fearing in consequence prosecution at the hands of the authorities, he abided events in France and Belgium, and after issuing in Leipzig *Neuere Gedichte* (1846) returned home, suffered a short term of imprisonment, and in 1848 was elected member for Leitmeritz in the short-lived German parliament at Frankfort-on-Main, in which he sided with the extreme Radical party. He took part with Robert Blum (1807-1848) in the revolution of that year in Vienna, but contrived to escape to London and Paris. In 1849 he published *Reimchronik des Pfaffen Mauritius*, a satirical political poem in the style of Heine. During the Crimean War (1854-56) Hartmann was correspondent of the *Kölnische Zeitung*, settled in 1860 in Geneva as a teacher of German literature and history, became in 1865 editor of the *Freya* in Stuttgart and in 1868 a member of the staff of the *Neue Freie Presse* in Vienna. He died at Oberdöbling near Vienna on the 13th of May 1872.

Among Hartmann's numerous works may be especially mentioned *Der Krieg um den Wald* (1850), a novel, the scene of which is laid in Bohemia; *Tagebuch aus Languedoc und Provence* (1852); *Erzählungen eines Unsteten* (1858); and *Die letzten Tage eines Königs* (1867). His idyll, *Adam und Eva* (1851), and his collection of poetical tales, *Schatten* (1851), show that the author possessed but little talent for epic narrative. Hartmann's poems are often lacking in genuine poetical feeling, but the love of liberty which inspired them, and the fervour, ease and clearness of their style compensated for these shortcomings and gained for him a wide circle of admirers.

His *Gesammelte Werke* were published in 10 vols, in 1873-1874, and a selection of his *Gedichte* in the latter year. The first two volumes of a new edition of his works contain a biography of Hartmann by O. Wittner. See also E. Ziel, "Moritz Hartmann" (in *Unsere Zeit*, 1872); A. Marchand, *Les Poètes lyriques de l'Autriche* (1892); Brandes, *Das junge Deutschland* (Charlottenburg, 1899).

HARTMANN VON AUE (*c.* 1170-*c.* 1210), one of the chief Middle High German poets. He belonged to the lower nobility of Swabia, where he was born about 1170. After receiving a monastic education, he became retainer (*dienstman*) of a nobleman whose domain, Aue, has been identified with Obernau on the Neckar. He also took part in the Crusade of 1196-97. The date of his death is as uncertain as that of his birth; he is mentioned by Gottfried von Strassburg (*c.* 1210) as still alive, and in the *Krone* of Heinrich von dem Türlin, written about 1220, he is mourned for as dead. Hartmann was the author of four narrative poems which are of importance for the evolution of the Middle High German court epic. The oldest of these, *Erec*, which may have been written as early as 1191 or 1192, and the latest and ripest, *Iwein*, belong to the Arthurian cycle and are based on epics by Chrétien de Troyes (*q.v.*); between them lie the romance, *Gregorius*, also an adaptation of a French epic, and *Der arme Heinrich*, one of the most charming specimens of medieval German poetry. The theme of the latter—the cure of the leper, Heinrich, by a young girl who is willing to sacrifice her life for him—Hartmann had evidently found in the annals of the family in whose service he stood. Hartmann's most conspicuous merit as a poet lies in his style; his language is carefully chosen, his narrative lucid, flowing and characterized by a sense of balance and proportion which is rarely to be found in German medieval poetry. *Gregorius, Der arme Heinrich* and his lyrics, which are all fervidly religious in tone, imply a tendency towards asceticism, but, on the whole, Hartmann's striving seems rather to have been to reconcile the extremes of life; to establish a middle way of human conduct between the worldly pursuits of knighthood and the ascetic ideals of medieval religion.

Erec has been edited by M. Haupt (2nd ed., Leipzig, 1871); *Gregorius*, by H. Paul (2nd ed., Halle, 1900); *Der arme Heinrich*, by W. Wackernagel and W. Toischer (Basel, 1885) and by H. Paul (2nd ed., Halle, 1893); by J. G. Robertson (London, 1895), with English notes; *Iwein*, by G. F. Benecke and K. Lachmann (4th ed., Berlin, 1877) and E. Henrici (Halle, 1891-1893). A convenient edition of all Hartmann's poems by F. Bech, 3 vols. (3rd ed., Leipzig, 1891-1893, vol. 3 in 4th ed., 1902).

The literature on Hartmann is extensive. See especially L. Schmid, *Des Minnesingers Hartmann von Aue Stand, Heimat und Geschlecht* (Tübingen, 1874); H. Rötteken, *Die epische Kunst Heinrichs von Veldeke und Hartmanns von Aue* (Halle, 1887); F. Saran, *Hartmann von Aue als Lyriker* (Halle, 1889); A. E. Schönbach, *Über Hartmann von Aue* (Graz, 1894); F. Piquet, *Étude sur Hartmann d'Aue* (Paris, 1898). Translations have been made into modern German of all Hartmann's poems, while *Der arme Heinrich* has repeatedly attracted the attention of modern poets, both English (Longfellow, Rossetti) and German (notably, Gerhart Hauptmann). See H. Tardel, *Der arme Heinrich in der neueren Dichtung* (Berlin, 1905).

HARTSHORN, SPIRITS OF, a name signifying originally the ammoniacal liquor obtained by the distillation of horn shavings, afterwards applied to the partially purified similar products of the action of heat on nitrogenous animal matter generally, and now popularly used to designate the aqueous solution of ammonia (*q.v.*).

HARTZENBUSCH, JUAN EUGENIO (1806-1880), Spanish dramatist, was born at Madrid on the 6th of September 1806. The son of a German carpenter, he was educated for the priesthood, but he had no religious vocation and, on leaving school, followed his father's trade till 1830, when he learned shorthand and joined the staff of the *Gaceta*. His earliest dramatic essays were translations from Molière, Voltaire and the elder Dumas; he

next recast old Spanish plays, and in 1837 produced his first original play, *Los Amantes de Teruel*, the subject of which had been used by Rey de Artieda, Tirso de Molina and Perez de Montalbán. *Los Amantes de Teruel* at once made the author's reputation, which was scarcely maintained by *Doña Mencia* (1839) and *Alfonso el Casto* (1841); it was not till 1845 that he approached his former success with *La Jura en Santa Gadea*. Hartzenbusch was chief of the National Library from 1862 to 1875, and was an indefatigable—though not very judicious—editor of many national classics. Inferior in inspiration to other contemporary Spanish dramatists, Hartzenbusch excels his rivals in versatility and in conscientious workmanship.

HĀRŪN AL-RASHĪD (763 or 766-809), *i.e.* "Hārūn the Orthodox," the fifth of the 'Abbasid caliphs of Bagdad, and the second son of the third caliph Mahdi. His full name was Hārūn ibn Muhammad ibn 'Abdallah ibn Muḥammad ibn 'Ali ibn 'Abdallah ibn 'Abbās. He was born at Rai (Rhagae) on the 20th of March A.D. 763, according to some accounts, and according to others on the 15th of February A.D. 766. Hārūn al-Rashīd was twenty-two years old when he ascended the throne. His father Mahdi just before his death conceived the idea of superseding his elder son Mūsa (afterwards known as Hādī, the fourth caliph) by Hārūn. But on Mahdi's death Hārūn gave way to his brother. For the campaigns in which he took part prior to his accession see CALIPHATE, section C, *The Abbasids*, §§ 3 and 4.

Rashīd owed his succession to the throne to the prudence and sagacity of Yahyā b. Khālid the Barmecide, his secretary, whom on his accession he appointed his lieutenant and grand vizier (see BARMECIDES). Under his guidance the empire flourished on the whole, in spite of several revolts in the provinces by members of the old Alid family. Successful wars were waged with the rulers of Byzantium and the Khazars. In 803, however, Hārūn became suspicious of the Barmecides, whom with only a single exception he caused to be executed. Henceforward the chief power was exercised by Fadl b. Rabi', who had been chamberlain not only under Hārūn himself but under his predecessors, Mansūr, Madhi and Hādī. In the later years of Hārūn's reign troubles arose in the eastern parts of the empire. These troubles assumed proportions so serious that Hārūn himself decided to go to Khorasan. He died, however, at Tus in March 809.

The reign of Hārūn (see CALIPHATE, section C, § 5) was one of the most brilliant in the annals of the caliphate, in spite of losses in north-west Africa and Transoxiana. His fame spread to the West, and Charlemagne and he exchanged gifts and compliments as masters respectively of the West and the East. No caliph ever gathered round him so great a number of learned men, poets, jurists, grammarians, cadis and scribes, to say nothing of the wits and musicians who enjoyed his patronage. Hārūn himself was a scholar and poet, and was well versed in history, tradition and poetry. He possessed taste and discernment, and his dignified demeanour is extolled by the historians. In religion he was extremely strict; he prostrated himself a hundred times daily, and nine or ten times made the pilgrimage to Mecca. At the same time he cannot be regarded as a great administrator. He seems to have left everything to his viziers Yahyā and Fadl, to the former of whom especially was due the prosperous condition of the empire. Hārūn is best known to Western readers as the hero of many of the stories in the *Arabian Nights*; and in Arabic literature he is the central figure of numberless anecdotes and humorous stories. Of his incognito walks through Bagdad, however, the authentic histories say nothing. His Arabic biographers are unanimous in describing him as noble and generous, but there is little doubt that he was in fact a man of little force of character, suspicious, untrustworthy and on occasions cruel.

See the Arabic histories of Ibn al-Athir and Ibn Khaldūn. Among modern works see Sir W. Muir, *The Caliphate* (London, 1891); R. D. Osborn, *Islam under the Khalifs of Bagdad* (London, 1878); Gustav Weil, *Geschichte der Chalifen* (Mannheim and Stuttgart, 1846-1862); G. le Strange, *Baghdad during the Abbasid Caliphate* (Oxford, 1900); A. Müller, *Der Islam*, vol. i. (Berlin, 1885); E. H. Palmer, *The Caliph Haroun Alraschid* (London, 1880); J. B. Bury's edition of Gibbon's *Decline and Fall* (London, 1898), vol. vi. pp. 34 foll.

HARUSPICES, or **Aruspices** (perhaps "entrail observers," cf. Skt. hira, Gr. χορδή), a class of soothsayers in Rome. Their art (*disciplina*) consisted especially in deducing the will of the gods from the appearance presented by the entrails of the slain victim. They also interpreted all portents or unusual phenomena of nature, especially thunder and lightning, and prescribed the expiatory ceremonies after such events. To please the god, the victim must be without spot or blemish, and the practice of observing whether the entrails presented any abnormal appearance, and thence deducing the will of heaven, was also very important in Greek religion. This art, however, appears not to have been, as some other modes of ascertaining the will of the gods undoubtedly were, of genuine Aryan growth. It is foreign to the Homeric poems, and must have been introduced into Greece after their composition. In like manner, as the Romans themselves believed, the art was not indigenous in Rome, but derived from Etruria.[1] The Etruscans were said to have learned it from a being named Tages, grandson of Jupiter, who had suddenly sprung from the ground near Tarquinii. Instructions were contained in certain books called *libri haruspicini*, *fulgurales*, *rituales*. The art was practised in Rome chiefly by Etruscans, occasionally by native-born Romans who had studied in the priestly schools of Etruria. From the regal period to the end of the republic, haruspices were summoned from Etruria to deal with prodigies not mentioned in the pontifical and Sibylline books, and the Roman priests carried out their instructions as to the offering necessary to appease the anger of the deity concerned. Though the art was of great importance under the early republic, it never became a part of the state religion. In this respect the haruspices ranked lower than the augurs, as is shown by the fact that they received a salary; the augurs were a more ancient and purely Roman institution, and were a most important element in the political organization of the city. In later times the art fell into disrepute, and the saying of Cato the Censor is well known, that he wondered how one haruspex could look another in the face without laughing (Cic. *De div.* ii. 24). Under the empire, however, we hear of a regular collegium of sixty haruspices; and Claudius is said to have tried to restore the art and put it under the control of the pontifices. This collegium continued to exist till the time of Alaric.

See A. Bouché-Leclercq, *Histoire de la divination dans l'antiquité* (1879-1881); Marquardt, *Römische Staatsverwaltung*, iii. (1885), pp. 410-415; G. Schmeisser, *Die etruskische Disciplin vom Bundesgenossenkriege bis zum Untergang des Heidentums* (1881), and *Quaestionum de Etrusca disciplina particula* (1872); P. Clairin, *De haruspicibus apud Romanos* (1880). Also OMEN.

1 The statement of Dionysius of Halicarnassus (ii. 22) that the haruspices were instituted by Romulus is due to his confusing them with the augurs.

HARVARD UNIVERSITY, the oldest of American educational institutions, established at Cambridge, Massachusetts. In 1636 the General Court of the colony voted £400 towards "a schoale or colledge," which in the next year was ordered to be at "New Towne." In memory of the English university where many (probably some seventy) of the leading men of the colony had been educated, the township was named Cambridge in 1638. In the same year John Harvard (1607-1638), a Puritan minister lately come to America, a bachelor and master of Emmanuel college, Cambridge, dying in Charlestown (Mass.), bequeathed to the wilderness seminary half his estate (£780) and some three hundred books; and the college, until then unorganized, was named Harvard College (1639) in his honour. Its history is unbroken from 1640, and its first commencement was held in 1642. The spirit of the founders is beautifully expressed in the words of a contemporary letter which are carved on the college gates: "After God had carried us safe to New-England, and wee had builded our houses, provided necessaries for our liveli-hood, rear'd convenient places for Gods worship, and setled the Civill Government; One of the next things we longed for, and looked after was to advance *Learning*, and perpetuate it to Posterity; dreading to leave an illiterate Ministry to the Churches, when our present Ministers shall lie in the Dust." The college charter of 1650 dedicated it to "the advancement of all good literature, arts, and sciences," and "the education of the English and Indian youth ... in knowledge and godlynes." The second building (1654) on the college grounds was called "the Indian College." In it was set up the College press, which since 1638 had been in the president's house, and here, it is believed, was printed the translation of the Bible (1661-1663) by John Eliot into the language of the natives, with primer, catechisms, grammars, tracts, &c. A fair number of Indians were students, but only one, Caleb Cheeshahteaumuck, took a bachelor's degree (1665). By generous aid received from abroad for this special object, the college was greatly helped in its infancy.

The charter of 1650 has been in the main, and uninterruptedly since 1707, the fundamental source of authority in the administration of the university. It created a co-optating corporation consisting of the president, treasurer and five fellows, who formally initiate administrative measures, control the college funds, and appoint officers of instruction and government; subject, however, to confirmation by the Board of Overseers (established in 1642), which has a revisory power over all acts of the corporation. Circumstances gradually necessitated ordinary government by the resident teachers; and to-day the various faculties, elaborately organized, exercise immediate government and discipline over all the students, and individually or in the general university council consider questions of policy. The Board of Overseers was at first jointly representative of state and church. The former, as founder and patron, long regarded Harvard as a state institution, controlling or aiding it through the legislature and the overseers; but the controversies and embarrassments incident to legislative action proved prejudicial to the best interests of the college, and its organic connexion with the state was wholly severed in 1866. Financial aid and practical dependence had ceased some time earlier; indeed, from the very beginning, and with steadily increasing preponderance, Harvard has been sustained and fostered by private munificence rather than by public money. The last direct subsidy from the state determined in 1824, although state aid was afterwards given to the Agassiz museum, later united with the university. The church was naturally sponsor for the early college. The changing composition of its Board of Overseers marked its liberation first from clerical and later from political control; since 1865 the board has been chosen by the alumni (non-residents of Massachusetts being eligible since 1880), who therefore really control the university. When the state ceased to repress effectually the rife speculation characteristic of the first half of the seventeenth century, in religion as in politics, and in America as in England, the unity of Puritanism gave way to a variety of intense sectarianisms, and this, as also the incoming of Anglican churchmen, made the old faith of the college insecure. President Henry Dunster (*c.* 1612-1659), the first president, was censured by the magistrates and removed from office for questioning infant baptism. The conservatives, who clung to pristine and undiluted Calvinism, sought to intrench themselves in Harvard, especially in the Board of Overseers. The history of the college from about 1673 to 1725 was exceedingly troubled. Increase and Cotton Mather, forceful but bigoted, were the bulwarks of reaction and fomenters of discord. One episode in the struggle was the foundation and encouragement of Yale College by the reactionaries of New England as a truer "school of the prophets" (Cotton Mather being particularly zealous in its interests), after they had failed to secure control of the government of Harvard. It represented conservative secession. In 1792 the first layman was chosen to the corporation; in 1805 a Unitarian became professor of theology; in 1843 the board of overseers was opened to clergymen of all denominations; in 1886 attendance on prayers by the students ceased to be compulsory. Thus Harvard, in response to changing ideas and conditions, grew away from the ideas of its founders.

Harvard, her alumni, and her faculty have been very closely connected with American letters, not only in the colonial period, when the Mathers, Samuel Sewall and Thomas Prince were important names, or in the revolutionary and early national epoch with the Adamses, Fisher Ames, Joseph Dennie and Robert Treat Paine, but especially in the second third of the 19th century, when the great New England movements of Unitarianism and Transcendentalism were led by Harvard graduates. In 1805 Henry Ware (1764-1845) was elected the first anti-Trinitarian to be Hollis professor of divinity, and this marked Harvard's close connexion with Unitarianism, in the later history of which Ware, his son Henry (1794-1843), and Andrews Norton (1786-1852), all Harvard alumni and professors, and Joseph Buckminster (1751-1812) and William Ellery Channing were leaders of the conservative Unitarians, and Joseph Stevens Buckminster (1784-1812), James Freeman Clarke, and Theodore Parker were liberal leaders. Of the "Transcendentalists," Emerson, Francis Henry Hedge (1805-1890), Clarke, Convers Francis (1795-1863), Parker, Thoreau and Christopher Pearse Cranch (1813-1892) were Harvard graduates. Longfellow's professorship at Harvard identified him with it rather than with Bowdoin; Oliver Wendell Holmes was professor of anatomy and physiology at Harvard in 1847-1882; and Lowell, a Harvard alumnus, was

Longfellow's successor in 1855-1886 as Smith Professor of the French and Spanish languages and literatures. Ticknor and Charles Eliot Norton are other important names in American literary criticism. The historians Sparks, Bancroft, Hildreth, Palfrey, Prescott, Motley and Parkman were graduates of Harvard, as were Edward Everett, Charles Sumner and Wendell Phillips.

In organization and scope of effort Harvard has grown, especially after 1869, under the direction of President Charles W. Eliot, to be in the highest sense a university; but the "college" proper, whose end is the liberal culture of undergraduates, continues to be in many ways the centre of university life, as it is the embodiment of university traditions. The medical school (in Boston) dates from 1782, the law school from 1817, the divinity school[1] (though instruction in theology was of course given from the foundation of the college) from 1819, and the dental school (in Boston) from 1867. The Bussey Institution at Jamaica Plain was established in 1871 as an undergraduate school of agriculture, and reorganized in 1908 for advanced instruction and research in subjects relating to agriculture and horticulture. The Graduate School of Arts and Sciences dates from 1872, the Graduate School of Applied Science (growing out of the Lawrence Scientific School) from 1906, and the Graduate School of Business Administration (which applies to commerce the professional methods used in post-graduate schools of medicine, law, &c.) from 1908. The Lawrence Scientific School, established in 1847, was practically abolished in 1907-1908, when its courses were divided between the College (which thereafter granted a degree of S.B.) and the Graduate School of Applied Science, which was established in 1906 and gives professional degrees in civil, mechanical and electrical engineering, mining, metallurgy, architecture, landscape architecture, forestry, applied physics, applied chemistry, applied zoology and applied geology. A school of veterinary medicine, established in 1882, was discontinued in 1901. The university institutions comprise the botanic garden (1807) and the (Asa) Gray herbarium (1864); the Arnold arboretum (1872), at Jamaica Plain, for the study of arboriculture, forestry and dendrology; the university museum of natural history, founded in 1859 by Louis Agassiz as a museum of comparative zoology, enormously developed by his son, Alexander Agassiz, and transferred to the university in 1876, though under an independent faculty; the Peabody museum of American archaeology and ethnology, founded in 1866 by George Peabody; the William Hayes Fogg art museum (1895); the Semitic museum (1889); the Germanic Museum (1902), containing rich gifts from Kaiser Wilhelm II., the Swiss government, and individuals and societies of Germanic lands; the social museum (1906); and the astronomical observatory (1843; location 42° 22′ 48″ N. lat., 71° 8′ W. long.), which since 1891 has maintained a station near Arequipa, Peru. A permanent summer engineering camp is maintained at Squam Lake, New Hampshire. In Petersham, Massachusetts, is the Harvard Forest, about 2000 acres of hilly wooded country with a stand in 1908 of 10,000,000 ft. B.M. of merchantable timber (mostly white pine); this forest was given to the university in 1907, and is an important part of the equipment of the division of forestry. The university library is the largest college library in the country, and from its slow and competent selection is of exceptional value. In 1908 it numbered, including the various special libraries, 803,800 bound volumes, about 496,600 pamphlets, and 27,450 maps. Some of its collections are of great value from associations or special richness, such as Thomas Carlyle's collection on Cromwell and Frederick the Great; the collection on folk-lore and medieval romances, supposed to be the largest in existence and including the material used by Bishop Percy in preparing his *Reliques*; and that on the Ottoman empire. The law library has been described by Professor A. V. Dicey of Oxford as "the most perfect collection of the legal records of the English people to be found in any part of the English-speaking world." There are department libraries at the Arnold arboretum, the Gray herbarium, the Bussey Institution, the astronomical observatory, the dental school, the medical school, the law school, the divinity school, the Peabody museum, and the museum of comparative zoology. In 1878 the library published the first of a valuable series of *Bibliographical Contributions*. Other publications of the university (apart from annual reports of various departments) are: the *Harvard Oriental Series* (started 1891), *Harvard Studies in Classical Philology* (1890), *Harvard Theological Review* (1907), the *Harvard Law Review* (1889), *Harvard Historical Studies* (1897), *Harvard Economic Studies* (1906), *Harvard Psychological Studies* (1903), the *Harvard Engineering Journal* (1902), the *Bulletin* (1874) of the Bussey Institution, the *Archaeological and Ethnological Papers* (1888) of the Peabody museum, and the Bulletin (1863), *Contributions and Memoirs* (1865) of the museum of comparative zoology. The students' publications include the *Crimson* (1873), a daily newspaper; the *Advocate* (1831), a literary bi-weekly; the *Lampoon* (1876), a comic bi-weekly; and the *Harvard Monthly* (1885), a literary monthly. The *Harvard Bulletin*, a weekly, and the *Harvard Graduates' Magazine* (1892), a quarterly, are published chiefly for the alumni.

In 1908-1909 there were 743 officers of instruction and administration (including those for Radcliffe) and 5250 students (1059 in 1869), the latter including 2238 in the college, 1641 in the graduate and professional schools, and 1332 in the summer school. Radcliffe College, for women, had 449 additional students. The whole number of degrees conferred up to 1905 was 31,805 (doctors of science and of philosophy by examination, 408; masters of arts and of science by examination, 1759). The conditions of the time when Harvard was a theological seminary for boys, governed like a higher boarding school, have left traces still discernible in the organization and discipline, though no longer in the aims of the college. The average age of students at entrance, only 14 years so late as 1820, had risen by 1890 to 19 years, making possible the transition to the present régime of almost entire liberty of life and studies without detriment, but with positive improvement, to the morals of the student body. A strong development toward the university ideal marked the opening of the 19th century, especially in the widening of courses, the betterment of instruction, and the suggestions of quickening ideas of university freedom, whose realization, along with others, has come since 1870. The elimination of the last vestiges of sectarianism and churchly discipline, a lessening of parietal oversight, a lopping off of various outgrown colonial customs, a complete reconstruction of professional standards and methods, the development of a great graduate school in arts and sciences based on and organically connected with the undergraduate college, a great improvement in the college standard of scholarship, the allowance of almost absolute freedom to students in the shaping of their college course (the "elective" system), and very remarkable material prosperity marked the administration (1860-1909) of President Eliot. In the readjustment in the curricula of American colleges of the elements of professional training and liberal culture Harvard has been bold in experiment and innovation. With Johns Hopkins University she has led the movement that has transformed university education, and her influence upon secondary education in America has been incomparably greater than that of any other university. Her entrance requirements to the college and to the schools of medicine, law, dentistry and divinity have been higher than those of any other American university. A bachelor's degree is requisite for entrance to the professional schools (except that of dentistry), and the master's degree (since 1872) is given to students only for graduate work in residence, and rarely to other persons as an honorary degree. In scholarship and in growth of academic freedom Germany has given the quickening impulse. This influence began with George Ticknor and Edward Everett, who were trained in Germany, and was continued by a number of eminent German scholars, some driven into exile for their

liberalism, who became professors in the second half of the 19th century, and above all by the many members of the faculty still later trained in German universities. The ideas of recognizing special students and introducing the elective system were suggested in 1824, attaining establishment even for freshmen by 1885, the movement characterizing particularly the years 1865-1885. The basis of the elective system (as in force in 1910) is freedom in choice of studies within liberal limits; and, as regards admission to college[2] (completely established 1891), the idea that the admission is of minds for the quality of their training and not for their knowledge of particular subjects, and that any subject may be acceptable for such training if followed with requisite devotion and under proper methods. Except for one course in English in the Freshman year, and one course in French or German for those who do not on entrance present both of these languages, no study is prescribed, but the student is compelled to select a certain number of courses in some one department or field of learning, and to distribute the remainder among other departments, the object being to secure a systematic education, based on the principle of knowing a little of everything and something well.

The material equipment of Harvard is very rich. In 1909 it included invested funds of $22,716,760 ($2,257,990 in 1869) and lands and buildings valued at $12,000,000 at least. In 1908-1909 an income of more than $130,000 was distributed in scholarships, fellowships, prizes and other aids to students. The yearly income available for immediate use from all sources in 1899-1904 averaged $1,074,229, of which $452,760 yearly represented gifts. The total gifts, for funds and for current use, in the same years aggregated $6,152,988. The income in 1907-1908 was $1,846,976; $241,924 was given for immediate use, and $449,822 was given for capital. The medical school is well endowed and is housed in buildings (1906) on Longwood Avenue, Boston; the gifts for its buildings and endowments made in 1901-1902 aggregate $5,000,000. Among the university buildings are two dining-balls accommodating some 2500 students, a theatre for public ceremonies, a chapel, a home for religious societies, a club-home (the Harvard Union) for graduates and undergraduates, an infirmary, gymnasium, boat houses and large playgrounds, with a concrete stadium capable of seating 27,000 spectators. Massachusetts Hall (1720) is the oldest building. University Hall (1815), the administration building, dignified, of excellent proportions and simple lines, is a good example of the work of Charles Bulfinch. Memorial Hall (1874), an ambitious building of cathedral suggestion, commemorates the Harvard men who fell in the Civil War, and near it is an ideal statue (1884) of John Harvard by Daniel C. French. The medical and dental schools are in Boston, and the Bussey Institution and Arnold Arboretum are at Jamaica Plain.

Radcliffe College, essentially a part of Harvard, dates from the beginning of systematic instruction of women by members of the Harvard faculty in 1879, the Society for the Collegiate Instruction of Women being formally organized in 1882. The present name was adopted in 1894 in honour of Ann Radcliffe, Lady Mowlson (*ob. c.* 1661), widow of Sir Thomas Mowlson, alderman and (1634) lord mayor of London, who in 1643 founded the first scholarship in Harvard College. From 1894 also dates the present official connexion of Radcliffe with Harvard. The requirements for admission and for degrees are the same as in Harvard (whose president countersigns all diplomas), and the president and fellows of Harvard control absolutely the administration of the college, although it has for immediate administration a separate government. Instruction is given by members of the university teaching force, who repeat in Radcliffe many of the Harvard courses. Many advanced courses in Harvard, and to a certain extent laboratory facilities, are directly accessible to Radcliffe students, and they have unrestricted access to the library.

The presidents of Harvard have been: Henry Dunster (1640-1654); Charles Chauncy (1654-1672); Leonard Hoar (1672-1675); Urian Oakes (1675-1681); John Rogers (1682-1684); Increase Mather (1685-1701); Charles Morton (vice-president) (1697-1698); Samuel Willard (1700-1707); John Leverett (1708-1724); Benjamin Wadsworth (1725-1737); Edward Holyoke (1737-1769); Samuel Locke (1770-1773); Samuel Langdon (1774-1780); Joseph Willard (1781-1804); Samuel Webber (1806-1810); John Thornton Kirkland (1810-1828); Josiah Quincy (1829-1845); Edward Everett (1846-1849); Jared Sparks (1849-1853); James Walker (1853-1860); Cornelius Conway Felton (1860-1862); Thomas Hill (1862-1868); Charles William Eliot (1869-1909); Abbott Lawrence Lowell (appointed 1909).

Authorities.—Benjamin Peirce, *A History of Harvard University* 1636-1775 (Boston, 1883); Josiah Quincy, *A History of Harvard University* (2 vols., Boston, 1840); Samuel A. Eliot, *Harvard College and its Benefactors* (Boston, 1848); H. C. Shelley, *John Harvard and his Times* (Boston, 1907); *The Harvard Book* (2 vols., Cambridge, 1874); G. Birkbeck Hill, *Harvard College, by an Oxonian* (New York, 1894); William R. Thayer, "History and Customs of Harvard University," in *Universities and their Sons*, vol. i. (Boston, 1898); *Official Guide to Harvard*, and the various other publications of the university; also the *Harvard Graduates' Magazine* (1892 sqq.).

1 Affiliated with the university, but autonomous and independent, is the Andover Theological Seminary, which in 1908 removed from Andover to Cambridge.

2 The requirements for admission as changed in 1908 are based on the "unit system"; satisfactory marks must be got in subjects aggregating 26 units, the unit being a measure of preparatory study. Of these 26 units, English (4 units), algebra (2), plane geometry (2), some science or sciences (2), history (2; either Greek and Roman, or American and English), a modern language (2; French and German) are prescribed; prospective candidates for the degree of A.B. are required to take examinations for 4 additional units in Greek or Latin, and for the other 8 points have large range of choice; and candidates for the degree of S.B. must take additional examinations in French or German (2 units) and have a similar freedom of choice in making up the remaining 10 units.

HARVEST (A.S. *hærfest* "autumn," O.H. Ger. *herbist*, possibly through an old Teutonic root representing Lat. carpere, "to pluck"), the season of the ingathering of crops. Harvest has been a season of rejoicing from the remotest ages. The ancient Jews celebrated the Feast of Pentecost as their harvest festival, the wheat ripening earlier in Palestine. The Romans had their Cerealia or feasts in honour of Ceres. The Druids celebrated their harvest on the 1st of November. In pre-reformation England Lammas Day (Aug. 1st, O.S.) was observed at the beginning of the harvest festival, every member of the church presenting a loaf made of new wheat. Throughout the world harvest has always been the occasion for many queer customs which all have their origin in the animistic belief in the Corn-Spirit or Corn-Mother. This personification of the crops has left its impress upon the

harvest customs of modern Europe. In west Russia, for example, the figure made out of the last sheaf of corn is called the Bastard, and a boy is wrapped up in it. The woman who binds this sheaf represents the “Cornmother,” and an elaborate simulation of childbirth takes place, the boy in the sheaf squalling like a new-born child, and being, on his liberation, wrapped in swaddling bands. Even in England vestiges of sympathetic magic can be detected. In Northumberland, where the harvest rejoicing takes place at the close of the reaping and not at the ingathering, as soon as the last sheaf is set on end the reapers shout that they have “got the kern.” An image formed of a wheatsheaf, and dressed in a white frock and coloured ribbons, is hoisted on a pole. This is the “kern-baby” or harvest-queen, and it is carried back in triumph with music and shouting and set up in a prominent place during the harvest supper. In Scotland the last sheaf if cut before Hallowmas is called the “maiden,” and the youngest girl in the harvest-field is given the privilege of cutting it. If the reaping finishes after Hallowmas the last corn cut is called the *Cailleach* (old woman). In some parts of Scotland this last sheaf is kept till Christmas morning and then divided among the cattle “to make them thrive all the year round,” or is kept till the first mare foals and is then given to her as her first food. Throughout the world, as J. G. Frazer shows, the semi-worship of the last sheaf is or has been the great feature of the harvest-home. Among harvest customs none is more interesting than harvest cries. The cry of the Egyptian reapers announcing the death of the corn-spirit, the rustic prototype of Osiris, has found its echo on the world’s harvest-fields, and to this day, to take an English example, the Devonshire reapers utter cries of the same sort and go through a ceremony which in its main features is an exact counterpart of pagan worship. “After the wheat is cut they ‘cry the neck.’ ... An old man goes round to the shocks and picks out a bundle of the best ears be can find ... this bundle is called ‘the neck’; the harvest hands then stand round in a ring, the old man holding ‘the neck’ in the centre. At a signal from him they take off their hats, stooping and holding them with both hands towards the ground. Then all together they utter in a prolonged cry ‘the neck!’ three times, raising themselves upright with their hats held above their heads. Then they change their cry to ‘Wee yen! way yen!’ or, as some report, ‘we haven!’” On a fine still autumn evening “crying the neck” has a wonderful effect at a distance. In East Anglia there still survives the custom known as “Hallering Largess.” The harvesters beg largess from passers, and when they have received money they shout thrice “Halloo, largess,” having first formed a circle, bowed their heads low crying “Hoo-Hoo-Hoo,” and then jerked their heads backwards and uttered a shrill shriek of “Ah! Ah!”

For a very full discussion of harvest customs see J. G. Frazer, *The Golden Bough*, and Brand’s *Antiquities of Great Britain* (Hazlitt’s edit., 1905).

HARVEST-BUG, the familiar name for mites of the family Trombidiidae, belonging to the order Acari of the class Arachnida. Although at one time regarded as constituting a distinct species, described as *Leptus autumnalis*, harvest-bugs are now known to be the six-legged larval forms of several British species of mites of the genus *Trombidium*. They are minute, rusty-brown organisms, barely visible to the naked eye, which swarm in grass and low herbage in the summer and early autumn, and cause considerable, sometimes intense, irritation by piercing and adhering to the skin of the leg, usually lodging themselves in some part where the clothing is tight, such as the knee when covered with gartered stockings. They may be readily destroyed, and the irritation allayed, by rubbing the affected area with some insecticide like turpentine or benzine. They are not permanently parasitic, and if left alone will leave their temporary host to resume the active life characteristic of the adult mite, which is predatory in habits, preying upon minute living animal organisms.

HARVESTER, Harvest-Spider, or Harvest-Man, names given to Arachnids of the order Opiliones, referable to various species of the family Phalangiidae. Harvest-spiders or harvest-men, so-called on account of their abundance in the late summer and early autumn, may be at once distinguished from all true spiders by the extreme length and thinness of their legs, and by the small size and spherical or oval shape of the body, which is not divided by a waist or constriction into an anterior and a posterior region. They may be met with in houses, back yards, fields, woods and heaths; either climbing on walls, running over the grass, or lurking under stones and fallen tree trunks. They are predaceous, feeding upon small insects, mites and spiders. The males are smaller than the females, and often differ from them in certain well-marked secondary sexual characters, such as the mandibular protuberance from which one of the common English spiders, *Phalangium cornutum*, takes its scientific name. The male is also furnished with a long and protrusible penis, and the female with an equally long and protrusible ovipositor. The sexes pair in the autumn, and the female, by means of her ovipositor, lays her eggs in some cleft or hole in the soil and leaves them to their fate. After breeding, the parents die with the autumn cold; but the eggs retain their vitality through the winter and hatch with the warmth of spring and early summer, the young gradually attaining maturity as the latter season progresses. Hence the prevalence of adult individuals in the late summer and autumn, and at no other time of the year. They are provided with a pair of glands, situated one on each side of the carapace, which secrete an evil-smelling fluid believed to be protective in nature. Harvest-men are very widely distributed and are especially abundant in temperate countries of the northern hemisphere. They are also, however, common in India, where they are well known for their habit of adhering together in great masses, comparable to a swarm of bees, and of swaying gently backwards and forwards. The long legs of harvest-men serve them not only as organs of rapid locomotion, but also as props to raise the body well off the ground, thus enabling the animals to stalk unmolested from the midst of an army of raiding ants.

(R. I. P.)

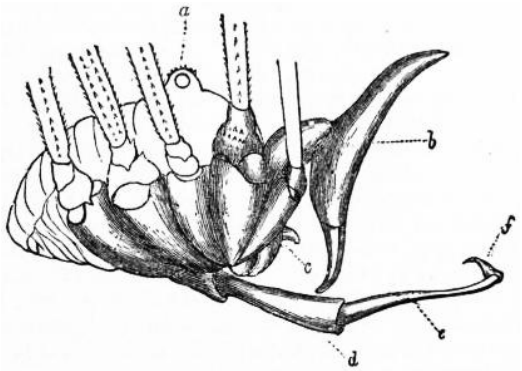


FIG. 1.—Harvest-man (*Phalangium cornutum*, Linn.); profile of male, with legs and palpi truncated.

a, Ocular tubercle.
b, Mandible.
c, Labrum (upper lip).
d, Sheath of penis protruded.
e, Penis.
f, The glans.

HARVEY, GABRIEL (*c.* 1545-1630), English writer, eldest son of a ropemaker of Saffron-Walden, Essex, was born about 1545. He matriculated at Christ's College, Cambridge, in 1566, and in 1570 was elected fellow of Pembroke Hall. Here he formed a lasting friendship with Edmund Spenser, and it has been suggested (*Athen. Cantab.*, ii. 258) that he may have been the poet's tutor. Harvey was a scholar of considerable weight, who has perhaps been judged too exclusively from the brilliant invectives directed against him by Thomas Nashe. Henry Morley, writing in the *Fortnightly Review* (March 1869), brought evidence from Harvey's Latin writings which shows that he was distinguished by quite other qualities than the pedantry and conceit usually associated with his name. He desired to be "epitaphed as the Inventour of the English Hexameter," and was the prime mover in the literary clique that desired to impose on English verse the Latin rules of quantity. In a "gallant, familiar letter" to M. Immerito (Edmund Spenser) he says that Sir Edward Dyer and Sir Philip Sidney were helping forward "our new famous enterprise for the exchanging of Barbarous and Balductum Rymes with Artificial Verses." The document includes a tepid appreciation of the *Faerie Queene* which had been sent to him for his opinion, and he gives examples of English hexameters illustrative of the principles enunciated in the correspondence. The opening lines—

"What might I call this Tree? A Laurell? O bonny Laurell
Needes to thy bowes will I bow this knee, and vayle my bonetto"—

afford a fair sample of the success of Harvey's metrical experiments, which presented a fair mark for the wit of Thomas Nashe. "He (Harvey) goes twitching and hopping in our language like a man running upon quagmires, up the hill in one syllable, and down the dale in another," says Nashe in *Strange Newes*, and he mimics him in the mocking couplet:

"But eh! what news do you hear of that good Gabriel Huffe-Snuffe,
Known to the world for a foole, and clapt in the Fleete for a Runner?"

Harvey exercised great influence over Spenser for a short time, and the friendship lasted even though Spenser's genius refused to be bound by the laws of the new prosody. Harvey is the Hobbinoll of his friend's *Shepheards Calender*, and into his mouth is put the beautiful song in the fourth eclogue in praise of Eliza. If he was really the author of the verses "To the Learned Shepheard" signed "Hobynoll" and prefixed to the *Faerie Queene*, he was a good poet spoiled. But Harvey's genuine friendship for Spenser shows the best side of a disposition uncompromising and quarrelsome towards the world in general. In 1573 ill-will against him in his college was so strong that there was a delay of three months before the fellows would agree to grant him the necessary grace for his M.A. degree. He became reader in rhetoric about 1576, and in 1578, on the occasion of Queen Elizabeth's visit to Sir Thomas Smith at Audley End, he was appointed to dispute publicly before her. In the next year he wrote to Spenser complaining of the unauthorized publication of satirical verses of his which were supposed to reflect on high personages, and threatened seriously to injure Harvey's career. In 1583 he became junior proctor of the university, and in 1585 he was elected master of Trinity Hall, of which he had been a fellow from 1578, but the appointment appears to have been quashed at court. He was a protégé of the Earl of Leicester, to whom he introduced Spenser, and this connexion may account for his friendship with Sir Philip Sidney. But in spite of patronage, a second application for the mastership of Trinity Hall failed in 1598. In 1585 he received the degree of D.C.L. from the university of Oxford, and is found practising at the bar in London. Gabriel's brother, Richard, had taken part in the Marprelate controversy, and had given offence to Robert Greene by contemptuous references to him and his fellow wits. Greene retorted in his *Quip for an Upstart Courtier* with some scathing remarks on the Harveys, the worst of which were expunged in later editions, drawing attention among other things to Harvey's modest parentage. In 1599 Archbishop Whitgift made a raid on contemporary satire in general, and among other books the tracts of Harvey and Nashe were destroyed, and it was forbidden to reprint them. Harvey spent the last years of his life in retirement at his native place, dying in 1630.

His extant Latin works are: *Ciceronianus* (1577); *G. Harveii rhetor, sive 2 dierum oratio de natura, arte et exercitatione rhetorica* (1577); *Smithus, vel Musarum lachrymae* (1578), in honour of Sir Thomas Smith; and *G. Harveii gratulationum Valdensium libri quatuour* (sic), written on the occasion of the queen's visit to Audley End (1578). *The Letter-Book of Gabriel Harvey, A.D. 1573-80* (1884, ed. E. J. L. Scott, Camden Society), contains rough drafts of the correspondence between Spenser and Harvey, letters relative to the disputes at Pembroke Hall, and

an extraordinary correspondence dealing with the pursuit of his sister Mercy by a young nobleman. A copy of Quintilian (1542), in the British Museum, is extensively annotated by Gabriel Harvey. After Greene's death Harvey published *Foure Letters and certaine Sonnets* (1592), in which in a spirit of righteous superiority he laid bare with spiteful fulness the miserable details of Greene's later years. Thomas Nashe, who in power of invective and merciless wit was far superior to Harvey, took upon himself to avenge Greene's memory, and at the same time settle his personal account with the Harveys, in *Strange Newes* (1593). Harvey refuted the personal charges made by Nashe in *Pierce's Supererogation, or a New Prayse Of the Old Asse ...* (1593). In *Christes Teares* over Jerusalem (1593) Nashe made a full apology to Harvey, who refused to be appeased, and resumed what had become a very scurrilous controversy in a *New Letter of Notable Contents* (1593). Nashe thereupon withdrew his apology in a new edition (1594) of *Christes Teares*, and hearing that Harvey had boasted of victory he produced the most biting satire of the series in *Have with you to Saffron Walden* (1596). Harvey retorted in *The Trimming of Thomas Nashe Gentleman, by the high-tituled patron Don Richardo de Medico campo ...* (1597).

His complete works were edited by Dr A. B. Grosart with a "Memorial Introduction" for the *Huth Library* (1884-1885). See also Isaac Disraeli, on "Literary Ridicule," in *Calamities of Authors* (ed. 1840); T. Warton's *History of English Poetry* (ed. W. C. Hazlitt, 1871); J. P. Collier's *Bibliographical and Critical Account of the Rarest Books in the English Language* (1865), and the *Works* of Thomas Nashe.

HARVEY, SIR GEORGE (1806-1876), Scottish painter, the son of a watchmaker, was born at St Ninians, near Stirling, in February 1806. Soon after his birth his parents removed to Stirling, where George was apprenticed to a bookseller. His love for art having, however, become very decided, in his eighteenth year he entered the Trustees' Academy at Edinburgh. Here he so distinguished himself that in 1826 he was invited by the Scottish artists, who had resolved to found a Scottish academy, to join it as an associate. Harvey's first picture, "A Village School," was exhibited in 1826 at the Edinburgh Institution; and from the time of the opening of the Academy in the following year he continued annually to exhibit. His best-known pictures are those depicting historical episodes in religious history from a puritan or evangelical point of view, such as "Covenanters Preaching," "Covenanters' Communion," "John Bunyan and his Blind Daughter," "Sabbath Evening," and the "Quitting of the Manse." He was, however, equally popular in Scotland for subjects not directly religious; and "The Bowlers," "A Highland Funeral," "The Curlers," "A Schule Skailin'," and "Children Blowing Bubbles in the Churchyard of Greyfriars', Edinburgh," manifest the same close observation of character, artistic conception and conscientious elaboration of details. In "The Night Mail" and "Dawn Revealing the New World to Columbus" the aspects of nature are made use of in different ways, but with equal happiness, to lend impressiveness and solemnity to human concerns. He also painted landscapes and portraits. In 1829 he was elected a fellow of the Royal Scottish Academy; in 1864 he succeeded Sir J. W. Gordon as president; and he was knighted in 1867. He died at Edinburgh on the 22nd of January 1876.

Sir George Harvey was the author of a paper on the "Colour of the Atmosphere," read before the Edinburgh Royal Society, and afterwards published with illustrations in *Good Words*; and in 1870 he published a small volume entitled *Notes of the Early History of the Royal Scottish Academy. Selections from the Works of Sir George Harvey, P.R.S.A., described by the Rev. A. L. Simpson, F.S.A. Scot., and photographed by Thomas Annan*, appeared at Edinburgh in 1869.

HARVEY, WILLIAM (1578-1657), English physician, the discoverer of the circulation of the blood, was the eldest son of Thomas Harvey, a prosperous Kentish yeoman, and was born at Folkestone on the 1st of April 1578. After passing through the grammar school of Canterbury, on the 31st of May 1593, having just entered his sixteenth year, he became a pensioner of Caius College, Cambridge, at nineteen he took his B.A. degree, and soon after, having chosen the profession of medicine, he went to study at Padua under H. Fabricius and Julius Casserius. At the age of twenty-four Harvey became doctor of medicine, in April 1602. Returning to England in the first year of James I., he settled in London; and two years later he married the daughter of Dr Lancelot Browne, who had been physician to Queen Elizabeth. In the same year he became a candidate of the Royal College of Physicians, and was duly admitted a fellow (June 1607). In 1609 he obtained the reversion of the post of physician to St Bartholomew's hospital. His application was supported by the king himself and by Dr Henry Atkins (1558-1635), the president of the college, and on the death of Dr Wilkinson in the course of the same year he succeeded to the post. He was thrice censor of the college, and in 1615 was appointed Lumleian lecturer.

In 1616 he began his course of lectures, and first brought forward his views upon the movements of the heart and blood. Meantime his practice increased, and he had the lord chancellor, Francis Bacon, and the earl of Arundel among his patients. In 1618 he was appointed physician extraordinary to James I., and on the next vacancy physician in ordinary to his successor. In 1628, the year of the publication of the *Exercitatio anatomica de motu cordis et sanguinis*, he was elected treasurer of the College of Physicians, but at the end of the following year he resigned the office, in order, by command of Charles I., to accompany the young duke of Lennox (James Stuart, afterwards duke of Richmond) on his travels. He appears to have visited Italy, and returned in 1632. Four years later he accompanied the earl of Arundel on his embassy to the emperor Ferdinand II. He was eager in collecting objects of natural history, sometimes causing the earl anxiety for his safety by his excursions in a country infested by robbers in consequence of the Thirty Years' War. In a letter written on this journey, he says: "By the way we could scarce see a dogg, crow, kite, raven, or any bird, or anything to anatomise; only sum few miserable people, the reliques of the war and the plague, whom famine had made anatomies before I came." Having returned to his practice in London at the close of the year 1636, he accompanied Charles I. in one of his journeys to Scotland (1639 or 1641). While at Edinburgh he visited the Bass Rock; he minutely describes its abundant population of sea-fowl in his treatise *De generatione*, and incidentally speaks of the account then credited of the solan goose growing on trees as a fable. He was in attendance on the king at the battle of Edgehill

(October 1642), where he withdrew under a hedge with the prince of Wales and the duke of York (then boys of twelve and ten years old), “and took out of his pocket a book and read. But he had not read very long before a bullet of a great gun grazed on the ground near him, which made him remove his station,” as he afterwards told John Aubrey. After the indecisive battle, Harvey followed Charles I. to Oxford, “where,” writes the same gossiping narrator, “I first saw him, but was then too young to be acquainted with so great a doctor. I remember he came several times to our college (Trinity) to George Bathurst, B.D. who had a hen to hatch eggs in his chamber, which they opened daily to see the progress and way of generation.” In Oxford he remained three years, and there was some chance of his being superseded in his office at St Bartholomew’s hospital, “because he hath withdrawn himself from his charge, and is retired to the party in arms against the Parliament.” It was no doubt at this time that his lodgings at Whitehall were searched, and not only the furniture seized but also invaluable manuscripts and anatomical preparations.[1]

While with the king at Oxford he was made warden of Merton College, but a year later, in 1646, that city surrendered to Fairfax, and Harvey returned to London. He was now sixty-eight years old, and, having resigned his appointments and relinquished the cares of practice, lived in learned retirement with one or other of his brothers. It was in his brother Daniel’s house at Combe that Dr (afterwards Sir George) Ent, a faithful friend and disciple (1604-1689), visited him in 1650. “I found him,” he says, “with a cheerful and sprightly countenance investigating, like Democritus, the nature of things. Asking if all were well with him—‘How can that be,’ he replied, ‘when the state is so agitated with storms and I myself am yet in the open sea? And indeed, were not my mind solaced by my studies and the recollection of the observations I have formerly made, there is nothing which should make me desirous of a longer continuance. But thus employed, this obscure life and vacation from public cares which would disgust other minds is the medicine of mine.’” The work on which he had been chiefly engaged at Oxford, and indeed since the publication of his treatise on the circulation in 1628, was an investigation into the recondite but deeply interesting subject of generation. Charles I. had been an enlightened patron of Harvey’s studies, had put the royal deer parks at Windsor and Hampton Court at his disposal, and had watched his demonstration of the growth of the chick with no less interest than the movements of the living heart. Harvey had now collected a large number of observations, though he would probably have delayed their publication. But Ent succeeded in obtaining the manuscripts, with authority to print them or not as he should find them. “I went from him,” he says, “like another Jason in possession of the golden fleece, and when I came home and perused the pieces singly, I was amazed that so vast a treasure should have been so long hidden.” The result was the publication of the *Exercitationes de generatione* (1651).

This was the last of Harvey’s labours. He had now reached his seventy-third year. His theory of the circulation had been opposed and defended, and was now generally accepted by the most eminent anatomists both in his own country and abroad. He was known and honoured throughout Europe, and his own college (Caius) voted a statue in his honour (1652) *viro monumentis suis immortali*. In 1654 he was elected to the highest post in his profession, that of president of the college; but the following day he met the assembled fellows, and, declining the honour for himself on account of the infirmities of age, recommended the re-election of the late president Dr Francis Prujean (1593-1666). He accepted, however, the office of consiliarius, which he again held in the two following years. He had already enriched the college with other gifts besides the honour of his name. He had raised for them “a noble building of Roman architecture (rustic work with Corinthian pilasters), comprising a great parlour or conversation room below and a library above”; he had furnished the library with books, and filled the museum with “simples and rarities,” as well as with specimens of instruments used in the surgical and obstetric branches of medicine. At last he determined to give to his beloved college his paternal estate at Burmarsh in Kent. His wife had died some years before, his brothers were wealthy men, and he was childless, so that he was defrauding no heir when, in July 1656, he made the transfer of this property, then valued at £56 per annum, with provision for a salary to the college librarian and for the endowment of an annual oration, which is still given on the anniversary of the day. The orator, so Harvey orders in his deed of gift, is to exhort the fellows of the college “to search out and study the secrets of nature by way of experiment, and also for the honour of the profession to continue mutual love and affection among themselves.”

Harvey, like his contemporary and great successor Thomas Sydenham, was long afflicted with gout, but he preserved his activity of mind to an advanced age. In his eightieth year, on the 3rd of June 1657, he was attacked by paralysis, and though deprived of speech was able to send for his nephews and distribute his watch, ring, and other personal trinkets among them. He died the same evening, “the palsy giving him an easy passport,” and was buried with great honour in his brother Eliab’s vault at Hempstead in Essex, *annorum et famae satur*. In 1883 the lead coffin containing his remains was enclosed in a marble sarcophagus and moved to the Harvey chapel within the church.

John Aubrey, to whom we owe most of the minor particulars about Harvey which have been preserved, says: “In person he was not tall, but of the lowest stature, round faced, olivaster complexion, little eyes, round, very black, full of spirits; his hair black as a raven, but quite white twenty years before he died.” The best portrait of him extant is by Cornelius Jansen in the library of the College of Physicians, one of those rescued from the great fire, which destroyed their original hall in 1666. It has been often engraved, and is prefixed to the fine edition of his works published in 1766.

Harvey’s Work on the Circulation.—In estimating the character and value of the discovery announced in the *Exercitatio de motu cordis et sanguinis*, it is necessary to bear in mind the previous state of knowledge on the subject. Aristotle taught that in man and the higher animals the blood was elaborated from the food in the liver, thence carried to the heart, and sent by it through the veins over the body. His successors of the Alexandrian school of medicine, Erasistratus and Herophilus, further elaborated his system, and taught that, while the veins carried blood from the heart to the members, the arteries carried a subtle kind of air or spirit. For the practical physician only two changes had been made in this theory of the circulation between the Christian era and the 16th century. Galen had discovered that the arteries were not, as their name implies, merely air-pipes, but that they contained blood as well as vital air or spirit. And it had been gradually ascertained that the nerves (νεῦρα) which arose from the brain and conveyed “animal spirits” to the body were different from the tendons or sinews (νεῦρα) which attach muscles to bones. *First*, then, the physicians of the time of Thomas Linacre knew that the blood is not stagnant in the body. So did Shakespeare and Homer, and every augur who inspected the entrails of a victim, and every village barber who breathed a vein. Plato even uses the expression to τὸ αἷμα κατὰ πάντα τὰ μέλη σφοδρῶς περιφέρεσθαι. But no one had a conception of a continuous stream returning to its source (a circulation in the true sense of the word) either in the system or in the lungs. If they used the word *circulatio*, as

did Caesalpinus,[2] it was as vaguely as the French policeman cries “Circulez.” The movements of the blood were in fact thought to be slow and irregular in direction as well as in speed, like the “circulation” of air in a house, or the circulation of a crowd in the streets of a city. *Secondly*, they supposed that one kind of blood flowed from the liver to the right ventricle of the heart, and thence to the lungs and the general system by the veins, and that another kind flowed from the left ventricle to the lungs and general system by the arteries. *Thirdly*, they supposed that the septum of the heart was pervious and allowed blood to pass directly from the right to the left side. *Fourthly*, they had no conception of the functions of the heart as the motor power of the movement of the blood. They doubted whether its substance was muscular; they supposed its pulsation to be due to expansion of the spirits it contained; they believed the only dynamic effect which it had on the blood to be sucking it in during its active diastole, and they supposed the chief use of its constant movements to be the due mixture of blood and spirits.

Of the great anatomists of the 16th century, Sylvius (*In Hipp. et Gal. phys. partem anatom. isagoge*) described the valves of the veins; Vesalius (*De humani corporis fabrica*, 1542) ascertained that the septum between the right and left ventricles is complete, though he could not bring himself to deny the invisible pores which Galen’s system demanded. Servetus, in his *Christianismi restitutio* (1553), goes somewhat farther than his fellow-student Vesalius, and says: “Paries ille medius non est aptus ad communicationem et elaborationem illam; licet aliquid resudare possit”; and, from this anatomical fact and the large size of the pulmonary arteries he concludes that there is a communication in the lungs by which blood passes from the pulmonary artery to the pulmonary vein: “Eodem artificio quo in hepate fit transfusio a vena porta ad venam cavam propter sanguinem, fit etiam in pulmone transfusio a vena arteriosa ad arteriam venosam propter spiritum.” The natural spirit of the left side and the vital spirit of the right side of the heart were therefore, he concluded, practically the same, and hence two instead of three distinct *spiritus* should be admitted. It seems doubtful whether even Servetus rightly conceived of the entire mass of the blood passing through the pulmonary artery and the lungs. The transference of the *spiritus naturalis* to the lungs, and its return to the left ventricle as *spiritus vitalis*, was the function which he regarded as important. Indeed a true conception of the lesser circulation as a transference of the whole blood of the right side to the left was impossible until the corresponding transference in the greater or systematic circulation was discovered. Servetus, however, was the true predecessor of Harvey in physiology, and his claims to that honour are perfectly authentic and universally admitted.[3]

The way then to Harvey’s great work had been paved by the discovery of the valves in the veins, and by that of the lesser circulation—the former due to Sylvius and Fabricius, the latter to Servetus—but the significance of the valves was unsuspected and the fact of even the pulmonary circulation was not generally admitted in its full meaning.

In his treatise Harvey proves (1) that it is the contraction, not the dilatation, of the heart which coincides with the pulse, and that the ventricles as true muscular sacs squeeze the blood which they contain into the aorta and pulmonary artery; (2) that the pulse is not produced by the arteries enlarging and so filling, but by the arteries being filled with blood and so enlarging; (3) that there are no pores in the septum of the heart, so that the whole blood in the right ventricle is sent to the lungs and round by the pulmonary veins to the left ventricle, and also that the whole blood in the left ventricle is again sent into the arteries, round by the smaller veins into the venae cavae, and by them to the right ventricle again—thus making a complete “circulation”; (4) that the blood in the arteries and that in the veins is the same blood; (5) that the action of the right and left sides of the heart, auricles, ventricles and valves, is the same, the mechanism in both being for reception and propulsion of liquid and not of air, since the blood on the right side, though mixed with air, is still blood; (6) that the blood sent through the arteries to the tissues is not all used, but that most of it runs through into the veins; (7) that there is no to and fro undulation in the veins, but a constant stream from the distant parts towards the heart; (8) that the dynamical starting-point of the blood is the heart and not the liver.

The *method* by which Harvey arrived at his complete and almost faultless solution of the most fundamental and difficult problem in physiology has been often discussed, and is well worthy of attention. He begins his treatise by pointing out the many inconsistencies and defects in the Galenical theory, quoting the writings of Galen himself, of Fabricius, Columbus and others, with great respect, but with unflinching criticism. For, in his own noble language, wise men must learn anatomy, not from the decrees of philosophers, but from the fabric of nature herself, “nec ita in verba jurare antiquitatis magistrae, ut veritatem amicam in apertis relinquant, et in conspectu omnium deserant.” He had, as we know, not only furnished himself with all the knowledge that books and the instructions of the best anatomists of Italy could give, but, by a long series of dissections, had gained a far more complete knowledge of the comparative anatomy of the heart and vessels than any contemporary—we may almost say than any successor—until the times of John Hunter and J. F. Meckel. Thus equipped, he tells us that he began his investigations into the movements of the heart and blood by looking at them—*i.e.* by seeing their action in living animals. After a modest preface, he heads his first chapter “Ex vivorum dissectione, qualis sit cordis motus.” He minutely describes what he saw and handled in dogs, pigs, serpents, frogs and fishes, and even in slugs, oysters, lobsters and insects, in the transparent *minima squilla*, “quae Anglice dicitur *a shrimp*,” and lastly in the chick while still in the shell. In these investigations he used a *perspicillum* or simple lens. He particularly describes his observations and experiments on the ventricles, the auricles, the arteries and the veins. He shows how the arrangement of the vessels in the foetus supports his theory. He adduces facts observed in disease as well as in health to prove the rapidity of the circulation. He explains how the mechanism of the valves in the veins is adapted, not, as Fabricius believed, to moderate the flow of blood from the heart, but to favour its flow to the heart. He estimates the capacity of each ventricle, and reckons the rate at which the whole mass of blood passes through it. He elaborately and clearly demonstrates the effect of obstruction of the blood-stream in arteries or in veins, by the forceps in the case of a snake, by a ligature on the arm of a man, and illustrates his argument by figures. He then sums up his conclusion thus: “Circulari quodam motu, in circuitu, agitari in animalibus sanguinem, et esse in perpetuo motu; et hanc esse actionem sive functionem cordis quam pulsu peragit; et omnino motus et pulsus cordis causam unam esse.” Lastly, in the 15th, 16th and 17th chapters, he adds certain confirmatory evidence, as the effect of position on the circulation, the absorption of animal poisons and of medicines applied externally, the muscular structure of the heart and the necessary working of its valves. The whole treatise, which occupies only 67 pages of large print in the quarto edition of 1766, is a model of accurate observation, patient accumulation of facts, ingenious experimentation, bold yet cautious hypothesis and logical deduction.

In one point only was the demonstration of the circulation incomplete. Harvey could not discover the capillary channels by which the blood passes from the arteries to the veins. This gap in the circulation was supplied several

years later by the great anatomist Marcello Malpighi, who in 1661 saw in the lungs of a frog, by the newly invented microscope, how the blood passes from the one set of vessels to the other. Harvey saw all that could be seen by the unaided eye in his observations on living animals; Malpighi, four years after Harvey's death, by another observation on a living animal, completed the splendid chain of evidence. If this detracts from Harvey's merit it leaves Servetus no merit at all. But in fact the existence of the channels first seen by Malpighi was as clearly pointed to by Harvey's reasoning as the existence of Neptune by the calculations of Leverrier and of Adams.

Harvey himself and all his contemporaries were well aware of the novelty and importance of his theory. He says in the admirable letter to Dr Argent, president of the College of Physicians, which follows the dedication of his treatise to Charles I., that he should not have ventured to publish "a book which alone asserts that the blood pursues its course and flows back again by a new path, contrary to the received doctrine taught so many ages by innumerable learned and illustrious men," if he had not set forth his theory for more than nine years in his college lectures, gradually brought it to perfection, and convinced his colleagues by actual demonstrations of the truth of what he advanced. He anticipates opposition, and even obloquy or loss, from the novelty of his views. These anticipations, however, the event proved to have been groundless. If we are to credit Aubrey indeed, he found that after the publication of the *De motu* "he fell mightily in his practice; 'twas believed by the vulgar that he was crackbrained, and all the physicians were against him." But the last assertion is demonstrably untrue; and if apothecaries and patients ever forsook him, they must soon have returned, for Harvey left a handsome fortune. By his own profession the book was received as it deserved. So novel a doctrine was not to be accepted without due inquiry, but his colleagues had heard his lectures and seen his demonstrations for years; they were already convinced of the truth of his theory, urged its publication, continued him in his lectureship, and paid him every honour in their power. In other countries the book was widely read and much canvassed. Few accepted the new theory; but no one dreamt of claiming the honour of it for himself, nor for several years did any one pretend that it could be found in the works of previous authors. The first attack on it was a feeble tract by one James Primerose, a pupil of Jean Riolan (*Exerc. et animadv. in libr. Harvei de motu cord. et sang.*, 1630). Five years later Parisanus, an Italian physician, published his *Lapis Lydius de motu cord. et sang*. (Venice, 1635), a still more bulky and futile performance. Primerose's attacks were "imbellia pleraque" and "sine ictu"; that of Parisanus "in quamplurimis turpius," according to the contemporary judgment of Johann Vessling. Their dulness has protected them from further censure. Caspar Hoffmann, professor at Nuremberg, while admitting the truth of the lesser circulation in the full Harveian sense, denied the rest of the new doctrine. To him the English anatomist replied in a short letter, still extant, with great consideration yet with modest dignity, beseeching him to convince himself by actual inspection of the truth of the facts in question. He concludes: "I accept your censure in the candid and friendly spirit in which you say you wrote it; do you also the same to me, now that I have answered you in the same spirit." This letter is dated May 1636, and in that year Harvey passed through Nuremberg with the earl of Arundel, and visited Hoffmann. But he failed to convince him; "nec tamen valuit Harveius vel coram," writes P. M. Schlegel, who, however, afterwards succeeded in persuading the obstinate old Galenist to soften his opposition to the new doctrine, and thinks that his complete conversion might have been effected if he had but lived a little longer—"nec dubito quin concessisset tandem in nostra castra." While in Italy the following year Harvey visited his old university of Padua, and demonstrated his views to Professor Vessling. A few months later this excellent anatomist wrote him a courteous and sensible letter, with certain objections to the new theory. The answer to this has not been preserved, but it convinced his candid opponent, who admitted the truth of the circulation in a second letter (both were published in 1640), and afterwards told a friend, "Harveium nostrum si audis, agnosces coelestem sanguinis et spiritus ingressum ex arteriis per venas in dextrum cordis sinum." Meanwhile a greater convert, R. Descartes, in his *Discours sur la méthode* (1637) had announced his adhesion to the new doctrine, and refers to "the English physician to whom belongs the honour of having first shown that the course of the blood in the body is nothing less than a kind of perpetual movement in a circle." J. Walaeus of Leyden, H. Regius of Utrecht and Schlegel of Hamburg successively adopted the new physiology. Of these professors, Regius was mauled by the pertinacious Primerose and mauled him in return (*Spongia qua eluuntur sordes quae Jac. Primirosius*, &c., and *Antidotum adv. Spongiam venenatam Henr. Regii*). Descartes afterwards repeated Harvey's vivisections, and, more convinced than ever, demolished Professor V. F. Plempius of Louvain, who had written on the other side. George Ent also published an *Apologia pro circulatione sanguinis* in answer to Parisanus.

At last Jean Riolan ventured to publish his *Enchiridium anatomicum* (1648), in which he attacks Harvey's theory, and proposes one of his own. Riolan had accompanied the queen dowager of France (Maria de' Medici) on a visit to her daughter at Whitehall, and had there met Harvey and discussed his theory. He was, in the opinion of the judicious Haller, "vir asper et in nuperos suosque coaevos immitis ac nemini parcens, nimis avidus suarum laudum praeco, et se ipso fatente anatomicorum princeps." Harvey replied to the *Enchiridium* with perfectly courteous language and perfectly conclusive arguments, in two letters *De circulatione sanguinis*, which were published at Cambridge in 1649, and are still well worth reading. He speaks here of the "circuitus sanguinis a me inventus." Riolan was unconvinced, but lived to see another professor of anatomy appointed in his own university who taught Harvey's doctrines. Even in Italy, Trullius, professor of anatomy at Rome, expounded the new doctrine in 1651. But the most illustrious converts were Jean Pecquet of Dieppe, the discoverer of the thoracic duct, and of the true course of the lacteal vessels, and Thomas Bartholinus of Copenhagen, in his *Anatome ex omnium veterum recentiorumque observationibus, imprimis institutionibus beati mei parentis Caspari Bartholini, ad circulationem Harveianam et vasa lymphatica renovata* (Leiden, 1651). At last Plempius also retracted all his objections; for, as he candidly stated, "having opened the bodies of a few living dogs, I find that all Harvey's statements are perfectly true." Hobbes of Malmesbury could thus say in the preface to his *Elementa philosophiae* that his friend Harvey, "solus quod sciam, doctrinam novam superata invidia vivens stabilivit."

It has been made a reproach to Harvey that he failed to appreciate the importance of the discoveries of the lacteal and lymphatic vessels by G. Aselli, J. Pecquet and C. Bartholinus. In three letters on the subject, one to Dr R. Morison of Paris (1652) and two to Dr Horst of Darmstadt (1655), a correspondent of Bartholin's, he discusses these observations, and shows himself unconvinced of their accuracy. He writes, however, with great moderation and reasonableness, and excuses himself from investigating the subject further on the score of the infirmities of age; he was then above seventy-four. The following quotation shows the spirit of these letters: "Laudo equidem summopere Pecqueti aliorumque in indaganda veritate industriam singularem, nec dubito quin multa adhuc in Democriti puteo abscondita sint, a venturi saeculi indefatigabili diligentia expromenda." Bartholin, though reasonably disappointed in not having Harvey's concurrence, speaks of him with the utmost respect, and generously says that the glory of discovering the movements of the heart and of the blood was enough for one man.

Harvey's Work on Generation.—We have seen how Dr. Ent persuaded his friend to publish this book in 1651. It is between five and six times as long as the *Exerc. de motu cord. et sang.*, and is followed by excursus *De partu,*

De uteri membranis, De conceptione; but, though the fruit of as patient and extensive observations, its value is far inferior. The subject was far more abstruse, and in fact inaccessible to proper investigation without the aid of the microscope. And the field was almost untrodden since the days of Aristotle. Fabricius, Harvey's master, in his work *De formatione ovi et pulli* (1621), had alone preceded him in modern times. Moreover, the seventy-two chapters which form the book lack the co-ordination so conspicuous in the earlier treatise, and some of them seem almost like detached chapters of a system which was never completed or finally revised.

Aristotle had believed that the male parent furnished the body of the future embryo, while the female only nourished and formed the seed; this is in fact the theory on which, in the *Eumenides* of Aeschylus, Apollo obtains the acquittal of Orestes. Galen taught almost as erroneously that each parent contributes seeds, the union of which produced the young animal. Harvey, after speaking with due honour of Aristotle and Fabricius, begins rightly "ab ovo"; for, as he remarks, "eggs cost little and are always and everywhere to be had," and moreover "almost all animals, even those which bring forth their young alive, and man himself, are produced from eggs" ("omnia omnino animalia, etiam vivipara, atque hominem adeo ipsum, ex ovo progigni"). This dictum, usually quoted as "omne vivurn ex ovo," would alone stamp this work as worthy of the discoverer of the circulation of the blood, but it was a prevision of genius, and was not proved to be a fact until K. E. von Baer discovered the mammalian ovum in 1827. Harvey proceeds with a careful anatomical description of the ovary and oviduct of the hen, describes the new-laid egg, and then gives an account of the appearance seen on the successive days of incubation, from the 1st to the 6th, the 10th and the 14th, and lastly describes the process of hatching. He then comments upon and corrects the opinions of Aristotle and Fabricius, declares against spontaneous generation (though in one passage he seems to admit the current doctrine of production of worms by putrefaction as an exception), proves that there is no *semen foemineum*, that the chalazae of the hen's eggs are not the *semen galli*, and that both parents contribute to the formation of the egg. He describes accurately the first appearance of the ovarian ova as mere specks, their assumption of yelk and afterwards of albumen. In chapter xlv. he describes two methods of production of the embryo from the ovum: one is *metamorphosis*, or the direct transformation of pre-existing material, as a worm from an egg, or a butterfly from an *aurelia* (chrysalis); the other is *epigenesis*, or development with addition of parts, the true generation observed in all higher animals. Chapters xlvi.-l. are devoted to the abstruse question of the efficient cause of generation, which, after much discussion of the opinions of Aristotle and of Sennertius, Harvey refers to the action of both parents as the efficient instruments of the first great cause.[4] He then goes on to describe the order in which the several parts appear in the chick. He states that the *punctum saliens* or foetal heart is the first organ to be seen, and explains that the nutrition of the chick is not only effected by yelk conveyed directly into the midgut, as Aristotle taught, but also by absorption from yelk and white by the umbilical (omphalomeseraic) veins; on the fourth day of incubation appear two masses (which he oddly names *vermiculus*), one of which develops into three vesicles, to form the cerebrum, cerebellum and eyes, the other into the breastbone and thorax; on the sixth or seventh day come the viscera, and lastly, the feathers and other external parts. Harvey points out how nearly this order of development in the chick agrees with what he had observed in mammalian and particularly in human embryos. He notes the bifid apex of the foetal heart in man and the equal thickness of the ventricles, the soft cartilages which represent the future bones, the large amount of liquor amnii and absence of placenta which characterize the foetus in the third month; in the fourth the position of the testes in the abdomen, and the uterus with its Fallopian tubes resembling the uterus bicornis of the sheep; the large thymus; the caecum, small as in the adult, not forming a second stomach as in the pig, the horse and the hare; the lobulated kidneys, like those of the seal ("*vitulo*," sc. *marino*) and porpoise, and the large suprarenal veins, not much smaller than those of the kidneys (li.-lvi). He failed, however, to trace the connexion of the urachus with the bladder. In the following chapters (lxiii.-lxxii.) he describes the process of generation in the fallow deer or the roe. After again insisting that all animals arise from ova, that a "conception" is an internal egg and an egg an extruded conception, he goes on to describe the uterus of the doe, the process of impregnation, and the subsequent development of the foetus and its membranes, the *punctum saliens*, the cotyledons of the placenta, and the "uterine milk," to which Sir William Turner recalled attention in later years. The treatise concludes with detached notes on the placenta, parturition and allied subjects.

Harvey's other Writings and Medical Practice.—The remaining writings of Harvey which are extant are unimportant. A complete list of them will be found below, together with the titles of those which we know to be lost. Of these the most important were probably that on respiration, and the records of post-mortem examinations. From the following passage (*De partu*, p. 550) it seems that he had a notion of respiration being connected rather with the production of animal heat than, as then generally supposed, with the cooling of the blood. "Haec qui diligenter perpenderit, naturamque aeris diligenter introspexerit, facile opinor fatebitur eundem nec refrigerationis gratia nec in pabulum animalibus concedi. Haec autem obiter duntaxat de respiratione diximus, proprio loco de eadem forsitan copiosius disceptaturi."

Of Harvey as a practising physician we know very little. Aubrey tells us that "he paid his visits on horseback with a foot-cloth, his man following on foot, as the fashion then was." He adds—"Though all of his profession would allow him to be an excellent anatomist, I never heard any that admired his therapeutic way. I knew several practitioners that would not have given threepence for one of his bills" (the apothecaries used to collect physicians' prescriptions and sell or publish them to their own profit), "and that a man could hardly tell by his bill what he did aim at." However this may have been,—and rational therapeutics was impossible when the foundation stone of physiology had only just been laid,—we know that Harvey was an active practitioner, performing such important surgical operations as the removal of a breast, and he turned his obstetric experience to account in his book on generation. Some good practical precepts as to the conduct of labour are quoted by Percivall Willughby (1596-1685). He also took notes of the anatomy of disease; these unfortunately perished with his other manuscripts. Otherwise we might regard him as a forerunner of G. B. Morgagni; for Harvey saw that pathology is but a branch of physiology, and like it must depend first on accurate anatomy. He speaks strongly to this purpose in his first epistle to Riolan: "Sicut enim sanorum et boni habitus corporum dissectio plurimum ad philosophiam et rectam physiologiam facit, ita corporum morbosorum et cachecticorum inspectio potissimum ad pathologiam philosophicam." The only specimen we have of his observations in morbid anatomy is his account of the post-mortem examination made by order of the king on the body of the famous Thomas Parr, who died in 1635, at the reputed age of 152. Harvey insists on the value of physiological truths for their own sake, independently of their immediate utility; but he himself gives us an interesting example of the practical application of his theory of the circulation in the cure of a large tumour by tying the arteries which supplied it with blood (*De generat.* Exerc. xix.).

The following is believed to be a complete list of all the known writings of Harvey, published and unpublished:—

Exercitatio anatomica de motu cordis et sanguinis, 4to (Frankfort-on-the-Main, 1628); *Exercitationes duae*

anatomicae de circulatione sanguinis, ad Johannem Riolanum, filium, Parisiensem (Cambridge, 1649); *Exercitationes de generatione animalium, quibus accedunt quaedam de partu, de membranis ac humoribus uteri, et de conceptione*, 4to (London, 1651); *Anatomia Thomae Parr*, first published in the treatise of Dr John Betts, *De ortu et natura sanguinis*, 8vo (London, 1669). Letters: (1) to Caspar Hoffmann of Nuremberg, May 1636; (2) to Schlegel of Hamburg, April 1651; (3) three to Giovanni Nardi of Florence, July 1651, Dec. 1653 and Nov. 1655; (4) two to Dr Morison of Paris, May 1652; (5) two to Dr Horst of Darmstadt, Feb. 1654-1655 and July 1655; (6) to Dr Vlackveld of Haarlem, May 1657. His letters to Hoffmann and Schlegel are on the circulation; those to Morison, Horst and Vlackveld refer to the discovery of the lacteals; the two to Nardi are short letters of friendship. All these letters were published by Sir George Ent in his collected works (Leiden, 1687). Of two MS. letters, one on official business to the secretary Dorchester was printed by Dr Aveling, with a facsimile of the crabbed handwriting (*Memorials of Harvey*, 1875), and the other, about a patient, appears in Dr Robert Willis's *Life of Harvey* (1878). *Praelectiones anatomiae universalis per me Gul. Harveium medicum Londinensem, anat. et chir. professorem, an. dom.* (1616), *aetat.* 37,—MS. notes of his Lumleian lectures in Latin,—are in the British Museum library; an autotype reproduction was issued by the College of Physicians in 1886. An account of a second MS. in the British Museum, entitled *Gulielmus Harveius de musculis, motu locali*, &c., was published by Sir G. E. Paget (*Notice of an unpublished MS. of Harvey*, London, 1850). The following treatises, or notes towards them, were lost either in the pillaging of Harvey's house, or perhaps in the fire of London, which destroyed the old College of Physicians: *A Treatise on Respiration*, promised and probably at least in part completed (pp. 82, 550, ed. 1766); *Observationes de usu Lienis*; *Observationes de motu locali*, perhaps identical with the above-mentioned manuscript; *Tractatum physiologicum*; *Anatomia medicalis* (apparently notes of morbid anatomy); *De generatione insectorum*. The fine 4to edition of Harvey's Works, published by the Royal College of Physicians in 1766, was superintended by Dr Mark Akenside; it contains the two treatises, the account of the post-mortem examination of old Parr, and the six letters enumerated above. A translation of this volume by Dr Willis, with Harvey's will, was published by the Sydenham Society, 8vo (London, 1849).

The following are the principal biographies of Harvey: in Aubrey's *Letters of Eminent Persons*, &c., vol. ii. (London, 1813), first published in 1685, the only contemporary account; in Bayle's *Dictionnaire historique et critique* (1698 and 1720; Eng. ed., 1738); in the *Biographia Britannica*, and in Aitken's *Biographical Memoirs*; the Latin Life by Dr Thomas Lawrence, prefixed to the college edition of Harvey's *Works* in 1766; memoir in *Lives of British Physicians* (London, 1830); a Life by Dr Robert Willis, founded on that by Lawrence, and prefixed to his English edition of Harvey in 1847; the much enlarged Life by the same author, published in 1878; the biography by Dr William Munk in the *Roll of the College of Physicians*, vol. i. (2nd ed., 1879).

The literature which has arisen on the great discovery of Harvey, on his methods and his merits, would fill a library. The most important contemporary writings have been mentioned above. The following list gives some of the most remarkable in modern times: the article in Bayle's dictionary quoted above; *Anatomical Lectures*, by Wm. Hunter, M.D. (1784); Sprengell, *Geschichte der Arzneikunde* (Halle, 1800), vol. iv.; Flourens, *Histoire de la circulation* (1854); Lewes, *Physiology of Common Life* (1859), vol. i. pp. 291-345; Ceradini, *La Scoperta della circolazione del sangue* (Milan, 1876); Tollin, *Die Entdeckung des Blutkreislaufs durch Michael Servet* (Jena, 1876); Kirchner, *Die Entdeckung des Blutkreislaufs* (Berlin, 1878); Willis, in his Life of Harvey; Wharton Jones, "Lecture on the Circulation of the Blood," *Lancet* for Oct. 25 and Nov. 1, 1879; and the various *Harveian Orations*, especially those by Sir E. Sieveking, Dr Guy and Professor George Rolleston.

(P. H. P.-S.)

---

1 "Ignoscant mihi niveae animae, si, summarum injuriarum memor, levem gemitum effudero. Doloris mihi haec causa est: cum, inter nuperos nostros tumultus et bella plusquam civilia, serenissimum regem (idque non solum senatus permissione sed et jussu) sequor, rapaces quaedam manus non modo aedium mearum supellectilem omnem expilarunt, sed etiam, quae mihi causa gravior querimoniae, adversaria mea, multorum annorum laboribus parta, e museo meo summoverunt. Quo factum est ut observationes plurimae, praesertim de generatione insectorum, cum republicae literariae (ausim dicere) detrimento, perierint."—*De gen.*, Ex. lxviii. To this loss Cowley refers—

> "O cursed war! who can forgive thee this?
> Houses and towns may rise again,
> And ten times easier 'tis
> To rebuild Paul's than any work of his."

2 Indeed the same word, περίοδος αἵματος, occurs in the Hippocratic writings, and was held by Van der Linden to prove that to the father of medicine himself, and not to Columbus or Caesalpinus, belonged the laurels of Harvey.

3 Realdo Columbus (*De re anatomica*, 1559) formally denies the muscularity of the heart, yet correctly teaches that blood and spirits pass from the right to the left ventricle, not through the septum but through the lungs, "quod nemo hactenus aut animadvertit aut scriptum reliquit." The fact that Harvey quotes Columbus and not Servetus is explained by the almost entire destruction of the writings of the latter, which are now among the rarest curiosities. The great anatomist Fabricius, Harvey's teacher at Padua, described the valves of the veins more perfectly than had Sylvius. Carlo Ruini, in his treatise on the *Anatomy and Diseases of the Horse* (1590), taught that the left ventricle sends blood and vital spirits to all parts of the body except the lungs—the ordinary Galenical doctrine. Yet on the strength of this phrase Professor J. B. Ercolani actually put up a tablet in the veterinary school at Bologna to Ruini as the discoverer of the circulation of the blood! The claims of Caesalpinus, a more plausible claimant to Harvey's laurels, are scarcely better founded. In his *Quaestiones peripateticae* (1571) he followed Servetus and Columbus in describing what we now know as the pulmonary "circulation" under that name, and this is the only foundation for the assertion (first made in Bayle's dictionary) that Caesalpinus knew "the circulation of the blood." He is even behind Servetus, for he only allows part of the blood of the right ventricle to go round by this "circuit"; some, he conceives, passes through the hypothetical pores in the septum, and the rest by the superior cava to the head and arms, by the inferior to the rest of the body: "Hanc esse venarum utilitatem ut omnes partes corporis sanguinem pro nutrimento deferant. Ex dextro ventr° cordis vena cava sanguinem crassiorem, in quo calor intensus est magis, ex altero autern ventr°, sanguinem temperatissimum ac sincerissimum habente, egreditur aorta." Caesalpinus seems to have had no original views on the subject; all that he writes is copied from Galen or from Servetus except some erroneous observations of his own. His greatest merit was as a botanist; and no claim to the "discovery of the circulation" was made by him or by his contemporaries. When it was made, Haller decided conclusively against it. The fact that an inscription has been placed on the bust of Caesalpinus at Rome, which states that he preceded others in recognizing and demonstrating "the general circulation of the blood," is only a proof of the blindness of misplaced national vanity.

4 So in Exerc. liv.: "Superior itaque et divinior opifex, quam est homo, videtur hominem fabricare et conservare, et nobilior artifex, quam gallus, pullum ex ovo producere. Nempe agnoscimus Deum, creatorem summum atque omnipotentem, in cunctorum animalium fabrica ubique praesentem esse, et in operibus suis quasi digito monstrari: cujus in procreatione pulli instrumenta sint gallus et gallina.... Nec cuiquam sane haec attributa conveniunt nisi omnipotenti

rerum Principio, quocunque demum nomine idipsum appellare libuerit: sive Mentem divinam cum Aristotele, sive cum Platone Animam Mundi, aut cum aliis Naturam naturantem, vel cum ethnicis Saturnum aut Iovem; vel potius (ut nos decet) Creatorem ac Patrem omnium quae in coelis et terris, a quo animalia eorumque origines dependent, cujusque nutu sive effatu fiunt et generantur omnia."

HARVEY, a city of Cook county, Illinois, U.S.A., about 18 m. S. of the Chicago Court House. Pop. (1900) 5395 (982 foreign-born); (1910) 7227. It is served by the Chicago Terminal Transfer, the Grand Trunk and the Illinois Central railways. Harvey is a manufacturing and residence suburb of Chicago. Among its manufactures are railway, foundry and machine-shop supplies, mining and ditching machinery, stone crushers, street-making and street-cleaning machinery, stoves and motor-vehicles. It was named in honour of Turlington W. Harvey, a Chicago capitalist, founded in 1890, incorporated as a village in 1891 and chartered as a city in 1895.

HARWICH, a municipal borough and seaport in the Harwich parliamentary division of Essex, England, on the extremity of a small peninsula projecting into the estuary of the Stour and Orwell, 70 m. N.E. by E. of London by the Great Eastern railway. Pop. (1901), 10,070. It occupies an elevated situation, and a wide view is obtained from Beacon Hill at the southern end of the esplanade. The church of St Nicholas was built of brick in 1821; and there are a town hall and a custom-house. The harbour is one of the best on the east coast of England, and in stormy weather is largely used for shelter. A breakwater and sea-wall prevent the blocking of the harbour entrance and encroachments of the sea; and there is another breakwater at Landguard Point on the opposite (Suffolk) shore of the estuary. The principal imports are grain and agricultural produce, timber and coal, and the exports cement and fish. Harwich is one of the principal English ports for continental passenger traffic, steamers regularly serving the Hook of Holland, Amsterdam, Rotterdam, Antwerp, Esbjerg, Copenhagen and Hamburg. The continental trains of the Great Eastern railway run to Parkeston Quay, 1 m. from Harwich up the Stour, where the passenger steamers start. The fisheries are important, principally those for shrimps and lobsters. There are cement and shipbuilding works. The port is the headquarters of the Royal Harwich Yacht Club. There are batteries at and opposite Harwich, and modern works on Shotley Point, at the fork of the two estuaries. There are also several of the Martello towers of the Napoleonic era. At Landguard Fort there are important defence works with heavy modern guns commanding the main channel. This has been a point of coast defence since the time of James I. Between the Parkeston Quay and Town railway stations is that of Dovercourt, an adjoining parish and popular watering-place. Harwich is under a mayor, 4 aldermen and 12 councillors. Area, 1541 acres.

Harwich (Herewica, Herewyck) cannot be shown to have been inhabited very early, although in the 18th century remains of a camp, possibly Roman, existed there. Harwich formed part of the manor of Dovercourt. It became a borough in 1319 by a charter of Edward II., which was confirmed in 1342 and 1378, and by each of the Lancastrian kings. The exact nature and degree of its self-government is not clear. Harwich received charters in 1547, 1553 and 1560. In 1604 James I. gave it a charter which amounted to a new constitution, and from this charter begins the regular parliamentary representation. Two burgesses had attended parliament in 1343, but none had been summoned since. Until 1867 Harwich returned two members; it then lost one, and in 1885 it was merged in the county. Included in the manor of Dovercourt, Harwich from 1086 was for long held by the de Vere family. In 1252 Henry III. granted to Roger Bigod a market here every Tuesday, and a fair on Ascension day, and eight days after. In 1320 a grant occurs of a Tuesday market, but no fair is mentioned. James I. granted a Friday market, and two fairs, at the feast of St Philip and St James, and on St Luke's day. The fair has died out, but markets are still held on Tuesday and Friday. Harwich has always had a considerable trade; in the 14th century merchants came even from Spain, and there was much trade in wheat and wool with Flanders. But the passenger traffic appears to have been as important at Harwich in the 14th century as it is now. Shipbuilding was a considerable industry at Harwich in the 17th century.

HARZBURG, a town of Germany, in the duchy of Brunswick, beautifully situated in a deep and well-wooded vale at the north foot of the Harz Mountains, at the terminus of the Brunswick-Harzburg railway, 5 m. E.S.E. from Goslar and 18 m. S. from Wolfenbüttel. Pop. (1905), 4396. The Radau, a mountain stream, descending from the Brocken, waters the valley and adds much to its picturesque charm. The town is much frequented as a summer residence. It possesses brine and carbonated springs, the Juliushall saline baths being about a mile to the south of the town, and a hydropathic establishment. A mile and a half south from the town lies the Burgberg, 1500 ft. above sea-level, on whose summit, according to tradition, was once an altar to the heathen idol Krodo, still to be seen in the Ulrich chapel at Goslar. There are on the summit of the hill the remains of an old castle, and a monument erected in 1875 to Prince Bismarck, with an inscription taken from one of his speeches against the Ultramontane claims of Rome—"*Nach Canossa gehen wir nicht.*"

The castle on the Burgberg called the Harzburg is famous in German history. It was built between 1065 and 1069, but was laid in ruins by the Saxons in 1074; again it was built and again destroyed during the struggle between the emperor Henry IV. and the Saxons. By Frederick I. it was granted to Henry the Lion, who caused it to be rebuilt about 1180. It was a frequent residence of Otto IV., who died therein, and after being frequently besieged and taken, it passed to the house of Brunswick. It ceased to be of importance as a fortress after the Thirty Years' War, and gradually fell into ruins.

See Delius, *Untersuchungen über die Geschichte der Harzburg* (Halberstadt, 1826); Dommes, *Harzburg und*

seine Umgebung (Goslar, 1862); Jacobs, *Die Harzburg und ihre Geschichte* (1885); and Stolle, *Führer von Bad Harzburg* (1899).

HARZ MOUNTAINS (also spelt HARTZ, Ger. *Harzgebirge*, anc. *Silva Hercynia*), the most northerly mountain-system of Germany, situated between the rivers Weser and Elbe, occupy an area of 784 sq. m., of which 455 belong to Prussia, 286 to Brunswick and 43 to Anhalt. Their greatest length extends in a S.E. and N.W. direction for 57 m., and their maximum breadth is about 20 m. The group is made up of an irregular series of terraced plateaus, rising here and there into rounded summits, and intersected in various directions by narrow, deep valleys. The north-western and higher part of the mass is called the Ober or Upper Harz; the south-eastern and more extensive part, the Unter or Lower Harz; while the N.W. and S.W. slopes of the Upper Harz form the Vorharz. The Brocken group, which divides the Upper and Lower Harz, is generally regarded as belonging to the first. The highest summits of the Upper Harz are the Brocken (3747 ft.), the Heinrichshöhe (3425 ft.), the Königsberg (3376 ft.) and the Wurmberg (3176 ft.); of the Lower Harz, the Josephshöhe in the Auerberg group and the Viktorhöhe in the Ramberg, each 1887 ft. Of these the Brocken (*q.v.*) is celebrated for the legends connected with it, immortalized in Goethe's *Faust*. Streams are numerous, but all small. While rendered extensively useful, by various skilful artifices, in working the numerous mines of the district, at other parts of their course they present the most picturesque scenery in the Harz. Perhaps the finest valley is the rocky Bodethal, with the Rosstrappe, the Hexentanzplatz, the Baumannshöhle and the Bielshöhle.

> The Harz is a mass of Palaeozoic rock rising through the Mesozoic strata of north Germany, and bounded on all sides by faults. Slates, schists, quartzites and limestones form the greater part of the hills, but the Brocken and Victorshöhe are masses of intrusive granite, and diabases and diabase tuffs are interstratified with the sedimentary deposits. The Silurian, Devonian and Carboniferous systems are represented—the Silurian and Devonian forming the greater part of the hills S.E. of a line drawn from Lauterberg to Wernigerode, while N.W. of this line the Lower Carboniferous predominates. A few patches of Upper Carboniferous are found on the borders of the hills near Ilfeld, Ballenstedt, &c., lying unconformably upon the Devonian. The structure of the Harz is very complicated, but the general strike of the folds, especially in the Oberharz plateau, is N.E. or N.N.E. The whole mass evidently belongs to the ancient Hercynian chain of North Europe (which, indeed, derives its name from the Harz), and is the north-easterly continuation of the rocks of the Ardennes and the Eifel. The folding of the old rocks took place towards the close of the Palaeozoic era; but the faulting to which they owe their present position was probably Tertiary. Metalliferous veins are common, amongst the best-known being the silver-bearing lead veins of Klausthal, which occur in the Culm or Lower Carboniferous.

Owing to its position as the first range which the northerly winds strike after crossing the north German plain, the climate on the summit of the Harz is generally raw and damp, even in summer. In 1895 an observatory was opened on the top of the Brocken, and the results of the first five years (1806-1900) showed a July mean of 50° Fahr., a February mean of 24.7°, and a yearly mean of 36.6°. During the same five years the rainfall averaged 64⅓ ins. annually. But while the summer is thus relatively ungenial on the top of the Harz, the usual summer heat of the lower-lying valleys is greatly tempered and cooled; so that, adding this to the natural attractions of the scenery, the deep forests, and the legendary and romantic associations attaching to every fantastic rock and ruined castle, the Harz is a favourite summer resort of the German people. Among the more popular places of resort are Harzburg, Thale and the Bodethal; Blankenburg, with the Teufelsmauer and the Hermannshöhle; Wernigerode, Ilsenburg, Grund, Lauterberg, Hubertusbad, Alexisbad and Suderode. Some of these, and other places not named, add to their natural attractions the advantage of mineral springs and baths, pine-needle baths, whey cures, &c. The Harz is penetrated by several railways, among them a rack-railway up the Brocken, opened in 1898. The district is traversed by excellent roads in all directions.

The northern summits are destitute of trees, but the lower slopes of the Upper Harz are heavily wooded with pines and firs. Between the forests of these stretch numerous peat-mosses, which contain in their spongy reservoirs the sources of many small streams. On the Brocken are found one or two arctic and several alpine, plants. In the Lower Harz the forests contain a great variety of timber. The oak, elm and birch are common, while the beech especially attains an unusual size and beauty. The walnut-tree grows in the eastern districts.

The last bear was killed in the Harz in 1705, and the last lynx in 1817, and since that time the wolf too has become extinct; but deer, foxes, wild cats and badgers are still found in the forests.

The Harz is one of the richest mineral storehouses in Germany, and the chief industry is mining, which has been carried on since the middle of the 10th century. The most important mineral is a peculiarly rich argentiferous lead, but gold in small quantities, copper, iron, sulphur, alum and arsenic are also found. Mining is carried on principally at Klausthal and St Andreasberg in the Upper Harz. Near the latter is one of the deepest mining shafts in Europe, namely the Samson, which goes down 2790 ft. or 720 ft. below sea-level. For the purpose of getting rid of the water, and obviating the flooding of such deep workings, it has been found necessary to construct drainage works of some magnitude. As far back as 1777-1799 the Georgsstollen was cut through the mountains from the east of Klausthal westward to Grund, a distance of 4 m.; but this proving insufficient, another sewer, the Ernst-Auguststollen, no less than 14 m. in length, was made from the same neighbourhood to Gittelde, at the west side of the Harz, in 1851-1864. Marble, granite and gypsum are worked; and large quantities of vitriol are manufactured. The vast forests that cover the mountain slopes supply the materials for a considerable trade in timber. Much wood is exported for building and other purposes, and in the Harz itself is used as fuel. The sawdust of the numerous mills is collected for use in the manufacture of paper. Turf-cutting, coarse lace-making and the breeding of canaries and native song-birds also occupy many of the people. Agriculture is carried on chiefly on the plateaus of the Lower Harz; but there is excellent pasturage both in the north and in the south. In the Lower Harz, as in Switzerland, the cows, which carry bells harmoniously tuned, are driven up into the heights in early summer, returning to the sheltered regions in late autumn.

The inhabitants are descended from various stocks. The Upper and Lower Saxon, the Thuringian and the Frankish races have all contributed to form the present people, and their respective influences are still to be traced in the varieties of dialect. The boundary line between High and Low German passes through the Harz. The

Harz was the last stronghold of paganism in Germany, and to that fact are due the legends, in which no district is richer, and the fanciful names given by the people to peculiar objects and appearances of nature.

See *Zeitschrift des Harzvereins* (Wernigerode, annually since 1868); Günther, *Der Harz in Geschichts- Kultur- und Landschaftsbildern* (Hanover, 1885), and "Der Harz" in Scobel's *Monographien zur Erdkunde* (Bielefeld, 1901); H. Hoffmann and others, *Der Harz* (Leipzig, 1899), *Harzwanderungen* (Leipzig, 1902); Hampe, *Flora Hercynica* (Halle, 1873); von Groddeck, *Abriss der Geognosie des Harzes* (2nd ed., Klausthal, 1883); Pröhle, *Harzsagen* (2nd ed., Leipzig, 1886); Hautzinger, *Der Kupfer- und Silbersegen des Harzes* (Berlin, 1877); Hoppe, *Die Bergwerke im Ober- und Unterharz* (Klausthal, 1883); Schulze, *Lithia Hercynica* (Leipzig, 1895); Lüdecke, *Die Minerale des Harzes* (Berlin, 1896).

HASA, EL (*Ahsa, Al Hasa*), a district in the east of Arabia stretching along the shore of the Persian Gulf from Kuwét in 29° 20′ N. to the south point of the Gulf of Bahrein in 25° 10′ N., a length of about 360 m. On the W. it is bounded by Nejd, and on the S.E. by the peninsula of El Katr which forms part of Oman. The coast is low and flat and has no deep-water port along its whole length with the exception of Kuwét; from that place to El Katif the country is barren and without villages or permanent settlements, and is only occupied by nomad tribes, of which the principal are the Bani Hajar, Ajman and Khālid. The interior consists of low stony ridges rising gradually to the inner plateau. The oases of Hofuf and Katif, however, form a strong contrast to the barren wastes that cover the greater part of the district. Here an inexhaustible supply of underground water (to which the province owes its name Hasa) issues in strong springs, marking, according to Arab geographers, the course of a great subterranean river draining the Nejd highlands. Hofuf the capital, a town of 15,000 to 20,000 inhabitants, with its neighbour Mubāriz scarcely less populous, forms the centre of a thriving district 50 m. long by 15 m. in breadth, containing numerous villages each with richly cultivated fields and gardens. The town walls enclose a space of 1½ by 1 m., at the north-west angle of which is a remarkable citadel attributed to the Carmathian princes. Mubāriz is celebrated for its hot spring, known as Um Sabā or "mother of seven," from the seven channels by which its water is distributed. Beyond the present limits of the oasis much of the country is well supplied with water, and ruined sites and half-obliterated canals show that it has only relapsed into waste in recent times. Cultivation reappears at Katif, a town situated on a small bay some 35 m. north-west of Bahrein. Date groves extend for several miles along the coast, which is low and muddy. The district is fertile but the climate is hot and unhealthy; still, owing to its convenient position, the town has a considerable trade with Bahrein and the gulf ports on one side and the interior of Nejd on the other. The fort is a strongly built enclosure attributed, like that at Hofuf, to the Carmathian prince Abu Tahir.

'Uker or 'Ujer is the nearest port to Hofuf, from which it is distant about 40 m.; large quantities of rice and piece goods transhipped at Bahrein are landed here and sent on by caravan to Hofuf, the great entrepôt for the trade between southern Nejd and the coast. It also shares in the valuable pearl fishery of Bahrein and the adjacent coast.

Politically El Hasa is a dependency of Turkey, and its capital Hofuf is the headquarters of the sanjak or district of Nejd. Hofuf, Katif and El Katr were occupied by Turkish garrisons in 1871, and the occupation has been continued in spite of British protest as to El Katr, which according to the agreement made in 1867, when Bahrein was taken under British protection, was tributary to the latter. Turkish claims to Kuwēt have not been admitted by Great Britain.

Authorities.—W. G. Palgrave, *Central and Eastern Arabia* (London, 1865); L. Pelly, *Journal R.G.S.* (1866); S. M. Zwemer, *Geog. Journal* (1902); G. F. Sadlier, *Diary of a Journey across Arabia* (Bombay, 1866); V. Chirol, *The Middle East* (London, 1904).

(R. A. W.)

ḤASAN and **ḤOSAIN** (or Ḥusein), sons of the fourth Mahommedan caliph Ali by his wife Fatima, daughter of Mahomet. On Ali's death Ḥasan was proclaimed caliph, but the strength of Moawiya who had rebelled against Ali was such that he resigned his claim on condition that he should have the disposal of the treasure stored at Kufa, with the revenues of Darabjird. This secret negotiation came to the ears of Ḥasan's supporters, a mutiny broke out and Ḥasan was wounded. He retired to Medina where he died about 669. The story that he was poisoned at Moawiya's instigation is generally discredited (see Caliphate, sect. B, § 1). Subsequently his brother Ḥosain was invited by partisans in Kufa to revolt against Moawiya's successor Yazid. He was, however, defeated and killed at Kerbela on the 10th of October (Muharram) 680 (see Caliphate, sect. B, § *2 ad init.*). Ḥosain is the hero of the Passion Play which is performed annually (*e.g.* at Kerbela) on the anniversary of his death by the Shi'ites of Persia and India, to whom from the earliest times the family of Ali are the only true descendants of Mahomet. The play lasts for several days and concludes with the carrying out of the coffins (*tabūt*) of the martyrs to an open place in the neighbourhood.

See Sir Wm. Muir, *The Caliphate* (1883); Sir Lewis Pelly, *The Miracle Play of Hasan and Hosein* (1879).

ḤASAN UL-BAṢRĪ [Abū Sa'ūd ul-Ḥasan ibn Abī-l-Ḥasan Yassār ul-Baṣrī], (642-728 or 737), Arabian theologian, was born at Medina. His father was a freedman of Zaid ibn Thābit, one of the *Anṣār* (Helpers of the Prophet), his mother a client of Umm Salama, a wife of Mahomet. Tradition says that Umm Salama often nursed Ḥasan in his

infancy. He was thus one of the *Tābi'ūn* (*i.e.* of the generation that succeeded the Helpers). He became a teacher of Baṣra and founded a school there. Among his pupils was Wāṣil ibn 'Atā, the founder of the Mo'tazilites. He himself was a great supporter of orthodoxy and the most important representative of asceticism in the time of its first development. With him fear is the basis of morality, and sadness the characteristic of his religion. Life is only a pilgrimage, and comfort must be denied to subdue the passions. Many writers testify to the purity of his life and to his excelling in the virtues of Mahomet's own companions. He was "as if he were in the other world." In politics, too, he adhered to the earliest principles of Islam, being strictly opposed to the inherited caliphate of the Omayyads and a believer in the election of the caliph.

His life is given in Nawāwī's *Biographical Dictionary* (ed. F. Wüstenfeld, Göttingen, 1842-1847). Cf. R. Dozy, *Essai sur l'histoire de l'islamisme*, pp. 201 sqq. (Leiden and Paris, 1879); A. von Kremer, *Culturgeschichtliche Streifzüge*, p. 5 seq.; R. A. Nicholson, *A Literary History of the Arabs*, pp. 225-227 (London, 1907).

(G. W. T.)

HASBEYA, or Hasbeiya, a town of the Druses, about 36 m. W. of Damascus, situated at the foot of Mt. Hermon in Syria, overlooking a deep amphitheatre from which a brook flows to the Hasbāni. The population is about 5000 (4000 Christians). Both sides of the valley are planted in terraces with olives, vines and other fruit trees. The grapes are either dried or made into a kind of syrup. In 1846 an American Protestant mission was established in the town. This little community suffered much persecution at first from the Greek Church, and afterwards from the Druses, by whom in 1860 nearly 1000 Christians were massacred, while others escaped to Tyre or Sidon. The castle in Hasbeya was held by the crusaders under Count Oran; but in 1171 the Druse emirs of the great Shehāb family (see Druses) recaptured it. In 1205 this family was confirmed in the lordship of the town and district, which they held till the Turkish authorities took possession of the castle in the 19th century. Near Hasbeya are bitumen pits let by the government; and to the north, at the source of the Hasbāni, the ground is volcanic. Some travellers have attempted to identify Hasbeya with the biblical Baal-Gad or Baal-Hermon.

ḤASDAI IBN SHAPRUT, the founder of the new culture of the Jews in Moorish Spain in the 10th century. He was both physician and minister to Caliph Abd ar-Raḥman III. in Cordova. A man of wide learning and culture, he encouraged the settlement of Jewish scholars in Andalusia, and his patronage of literature, science and art promoted the Jewish renaissance in Europe. Poetry, philology, philosophy all flourished under his encouragement, and his name was handed down to posterity as the first of the many Spanish Jews who combined diplomatic skill with artistic culture. This type was the creation of the Moors in Andalusia, and the Jews ably seconded the Mahommedans in the effort to make life at once broad and deep.

(I. A.)

HASDEU, or Hăjdeu, **BOGDAN PETRICEICU** (1836-1907), Rumanian philologist, was born at Khotin in Bessarabia in 1836, and studied at the university of Kharkov. In 1858 he first settled in Jassy as professor of the high school and librarian. He may be considered as the pioneer in many branches of Rumanian philology and history. At Jassy he started his *Archiva historica a Romaniei* (1865-1867), in which a large number of old documents in Slavonic and Rumanian were published for the first time. In 1870 he inaugurated *Columna lui Traian*, the best philological review of the time in Rumania. In his *Cuvente den Bătrăni* (2 vols., 1878-1881) he was the first to contribute to the history of apocryphal literature in Rumania. His *Historia critica a Romanilor* (1875), though incomplete, marks the beginning of critical investigation into the history of Rumania. Hasdeu edited the ancient Psalter of Coresi of 1577 (*Psaltirea lui Coresi*, 1881). His *Etymologicum magnum Romaniae* (1886, &c.) is the beginning of an encyclopaedic dictionary of the Rumanian language, though never finished beyond the letter B. In 1876 he was appointed director of the state archives in Bucharest and in 1878 professor of philology at the university of Bucharest. His works, which include one drama, *Rasvan şi Vidra*, bear the impress of great originality of thought, and the author is often carried away by his profound erudition and vast imagination. Hasdeu was a keen politician. After the death of his only child Julia in 1888 he became a mystic and a strong believer in spiritism. He died at Campina on the 7th of September 1907.

(M. G.)

HASDRUBAL, the name of several Carthaginian generals, among whom the following are the most important: —

1. The son-in-law of Hamilcar Barca (*q.v.*), who followed the latter in his campaign against the governing aristocracy at Carthage at the close of the First Punic War, and in his subsequent career of conquest in Spain. After Hamilcar's death (228) Hasdrubal, who succeeded him in the command, extended the newly acquired empire by skilful diplomacy, and consolidated it by the foundation of New Carthage (Cartagena) as the capital of the new province, and by a treaty with Rome which fixed the Ebro as the boundary between the two powers. In 221 he was killed by an assassin.

Polybius ii. 1; Livy xxi. 1; Appian, *Hispanica*, 4-8.

2. The second son of Hamilcar Barca, and younger brother of Hannibal. Left in command of Spain when Hannibal departed to Italy (218), he fought for six years against the brothers Gnaeus and Publius Scipio. He had on the whole the worst of the conflict, and a defeat in 216 prevented him from joining Hannibal in Italy at a critical moment; but in 212 he completely routed his opponents, both the Scipios being killed. He was subsequently outgeneralled by Publius Scipio the Younger, who in 209 captured New Carthage and gained other advantages. In the same year he was summoned to join his brother in Italy. He eluded Scipio by crossing the Pyrenees at their western extremity, and, making his way thence through Gaul and the Alps in safety, penetrated far into Central Italy (207). He was ultimately checked by two Roman armies, and being forced to give battle was decisively defeated on the banks of the Metaurus. Hasdrubal himself fell in the fight; his head was cut off and thrown into Hannibal's camp as a sign of his utter defeat.

Polybius x. 34-xi. 3; Livy xxvii. 1-51; Appian, *Bellum Hannibalicum*, ch. lii. sqq.; R. Oehler, *Der letzte Feldzug des Barkiden Hasdrubals* (Berlin, 1897); C. Lehmann, *Die Angriffe der drei Barkiden auf Italien* (Leipzig, 1905). See also Punic Wars.

HASE, CARL BENEDICT (1780-1864), French Hellenist, of German extraction, was born at Sulza near Naumburg on the 11th of May 1780. Having studied at Jena and Helmstedt, in 1801 he made his way on foot to Paris, where he was commissioned by the comte de Choiseul-Gouffier, late ambassador to Constantinople, to edit the works of Johannes Lydus from a MS. given to Choiseul by Prince Mourousi. Hase thereupon decided to devote himself to Byzantine history and literature, on which he became the acknowledged authority. In 1805 he obtained an appointment in the MSS. department of the royal library; in 1816 became professor of palaeography and modern Greek at the École Royale, and in 1852 professor of comparative grammar in the university. In 1812 he was selected to superintend the studies of Louis Napoleon (afterwards Napoleon III.) and his brother. He died on the 21st of March 1864. His most important works are the editions of Leo Diaconus and other Byzantine writers (1819), and of Johannes Lydus, *De ostentis* (1823), a masterpiece of textual restoration, the difficulties of which were aggravated by the fact that the MS. had for a long time been stowed away in a wine-barrel in a monastery. He also edited part of the Greek authors in the collection of the Historians of the Crusades and contributed many additions (from the fathers, medical and technical writers, scholiasts and other sources) to the new edition of Stephanus's *Thesaurus*.

See J. D. Guigniaut, *Notice historique sur la vie et les travaux de Carl Benedict Hase* (Paris, 1867); articles in *Nouvelle Biographie générale* and *Allgemeine deutsche Biographie*; and a collection of autobiographical letters, *Briefe von der Wanderung und aus Paris*, edited by O. Heine (1894), containing a vivid account of Hase's journey, his enthusiastic impressions of Paris and the hardships of his early life.

HASE, KARL AUGUST VON (1800-1890), German Protestant theologian and Church historian, was born at Steinbach in Saxony on the 25th of August 1800. He studied at Leipzig and Erlangen, and in 1829 was called to Jena as professor of theology. He retired in 1883 and was made a baron. He died at Jena on the 3rd of January 1890. Hase's aim was to reconcile modern culture with historical Christianity in a scientific way. But though a liberal theologian, he was no dry rationalist. Indeed, he vigorously attacked rationalism, as distinguished from the rational principle, charging it with being unscientific inasmuch as it ignored the historical significance of Christianity, shut its eyes to individuality and failed to give religious feeling its due. His views are presented scientifically in his *Evangelisch-protestantische Dogmatik* (1826; 6th ed., 1870), the value of which "lies partly in the full and judiciously chosen historical materials prefixed to each dogma, and partly in the skill, caution and tact with which the permanent religious significance of various dogmas is discussed" (Otto Pfleiderer). More popular in style is his *Gnosis oder prot.-evang. Glaubenslehre* (3 vols., 1827-1829; 2nd ed. in 2 vols., 1869-1870). But his reputation rests chiefly on his treatment of Church history in his *Kirchengeschichte, Lehrbuch zunächst für akademische Vorlesungen* (1834, 12th ed., 1900).

His biographical studies, Franz von Assisi (1856; 2nd ed., 1892), *Katerina von Siena* (1864; 2nd ed., 1892), *Neue Propheten* (Die Jungfrau von Orleans, Savonarola, Thomas Münzer) are judicious and sympathetic. Other works are: *Hutterus redivivus oder Dogmatik der evang.-luth. Kirche* (1827; 12th ed., 1883), in which he sought to present the teaching of the Protestant church in such a way as Hutter would have reconstructed it, had he still been alive; *Leben Jesu* (1829; 5th ed., 1865; Eng. trans., 1860); in an enlarged form, *Geschichte Jesu* (2nd ed., 1891); and *Handbuch der prot. Polemik gegen die röm.-kath. Kirche* (1862; 7th ed., 1900; Eng. trans., 1906).

For his life see his *Ideale und Irrtümer* (1872; 5th ed., 1894) and *Annalen meines Lebens* (1891); and cf. generally Otto Pfleiderer, *Development of Theology* (1890); F. Lichtenberger, *Hist. of German Theology* (1889).

HASHISH, or Hasheesh, the Arabic name, meaning literally "dried herb," for the various preparations of the Indian hemp plant (*Cannabis indica*), used as a narcotic or intoxicant in the East, and either smoked, chewed or drunk (see Hemp and Bhang). From the Arabic *hashīshīn*, *i.e.* "hemp-eaters," comes the English "assassin" (see Assassin).

HASLEMERE, a market-town in the Guildford parliamentary division of Surrey, England, 43 m. S.W. from London by the London & South-Western railway. It is situated in an elevated valley between the bold ridges of Hindhead (895 ft.) and Blackdown (918 ft.). Their summits are open and covered with heath, but their flanks and the lower ground are magnificently wooded. The hills are deeply scored by steep and picturesque valleys, of which the most remarkable is the Devil's Punch Bowl, a hollow of regular form on the west flank of Hindhead. The invigorating air has combined with scenic attraction to make the district a favourite place of residence. Professor Tyndall built a house on the top of Hindhead, setting an example followed by many others. On Blackdown, closely screened by plantations, is Aldworth, built for Alfred, Lord Tennyson, who died here in 1892. George Eliot stayed for a considerable period at Shottermill, a neighbouring village. Pop. of Haslemere (1901), 2614; of Hindhead, 666.

HASLINGDEN, a market-town and municipal borough in the Rossendale and Heywood parliamentary divisions of Lancashire, England, 19 m. N. by W. from Manchester by the Lancashire & Yorkshire railway. Pop. (1901), 18,543. It lies in a hilly district on the borders of the forest of Rossendale, and is supposed by some to derive its name from the hazel trees which formerly abounded in its neighbourhood. The old town stood on the slope of a hill, but the modern part has extended about its base. The parish church of St James was rebuilt in 1780, with the exception of the tower, which dates from the time of Henry VIII. The woollen manufacture was formerly the staple. The town, however, steadily increasing in importance, has cotton, woollen and engineering works—coal-mining, quarrying and brickmaking are carried on in the neighbourhood. The borough, as incorporated in 1891, comprised several townships and parts of townships, but under the Local Government Act of 1894 these were united into one civil parish. The corporation consists of a mayor, 6 aldermen and 18 councillors. Area, 8196 acres.

HASPE, a town of Germany, in the Prussian province of Westphalia, in the valley of the Ennepe, at the confluence of the Hasper, and on the railway from Düsseldorf to Dortmund, 10 m. N.E. of Barmen by rail. Pop. (1905), 19,813. Its industries include iron foundries, rolling mills, puddling furnaces, and manufactures of iron, steel and brass wares and of machines. Haspe was raised to the rank of a town in 1873.

HASSAM, CHILDE (1859-), American figure and landscape painter, born in Boston, Massachusetts, was a pupil of Boulanger and Lefebvre in Paris. He soon fell under the influence of the Impressionists, and took to painting in a style of his own, in brilliant colour, with effective touches of pure pigment. He won a bronze medal at the Paris Exhibition of 1889; medals at the World's Fair, Chicago, 1893; Boston Art Club, 1896; Philadelphia Art Club, 1892; Carnegie Institute, Pittsburg, 1898; Buffalo Pan-American, 1901; Temple gold medal, Pennsylvania Academy of Fine Arts, Philadelphia, 1899; and silver medal, Paris Exhibition, 1900. He became a member of the National Academy of Design, the Society of American Artists, the Ten Americans, the American Water Colour Society, the Société Nationale des Beaux Arts, Paris, and the Secession Society, Munich.

HASSAN, a town and district of Mysore, India. The town dates from the 11th century and had in 1901 a population of 8241. The district naturally divides into two portions, the Malnad, or hill country, which includes some of the highest ranges of the Western Ghats, and the Maidan or plain country, sloping towards the south. The Hemavati, which flows into the Cauvery in the extreme south, is the most important river of the district. The upper slopes of the Western Ghats are abundantly clothed with magnificent forests, and wild animals abound. Among the mineral products are kaolin, felspar and quartz. The soil of the valleys is a rich red alluvial loam. The area is 2547 sq. m. Population (1901), 568,919, showing an increase of 11% in the decade. The district contains some of the most remarkable archaeological monuments in India, such as the colossal Jain image at Sravana Belgola (a monolith 57 ft. high on the summit of a hill) and the great temple at Halebid. Coffee cultivation has been on the increase of late years. The first plantation was opened in 1843, and now there are many coffee estates owned by Europeans and also native holdings. The exports are large, consisting chiefly of food-grains and coffee. The imports are European piece-goods, hardware of all sorts and spices. The largest weekly fair is held at Alur. A great annual religious gathering and fair, attended by about 10,000 persons, takes place every year at Melukot. The Southern Mahratta railway traverses the north-east of the district.

The real history of Hassan does not begin until the epoch of the Hoysala dynasty, which lasted from the 11th till the 14th century. Their capital was at Dwarasamundra (Dwaravati-pura), the ruins of which are still to be seen scattered round the village of Halebid. The earlier kings professed the Jain faith, but the finest temples were erected to Siva by the later monarchs of the line. While they were at the zenith of their power the whole of southern India acknowledged their sway.

HASSANĪA, an African tribe of Semitic stock. They inhabit the desert between Merawi and the Nile at the 6th Cataract, and the left bank of the Blue Nile immediately south of Khartum.

HASSĀN IBN THĀBIT (died 674), Arabian poet, was born in Yathrib (Medina), a member of the tribe Khazraj. In his youth he travelled to Hira and Damascus, then settled in Medina, where, after the advent of Mahomet, he accepted Islam and wrote poems in defence of the prophet. His poetry is regarded as commonplace and lacking in distinction.

His diwan has been published at Bombay (1864), Tunis (1864) and Lahore (1878). See H. Hirschfeld's "Prolegomena to an edition of the Diwan of Hassan" in *Transactions of Oriental Congress* (London, 1892).

(G. W. T.)

HASSE, JOHANN ADOLPH (1699-1783), German musical composer, was born at Bergedorf near Hamburg, on the 25th of March 1699, and received his first musical education from his father. Being possessed of a fine tenor voice, he chose the theatrical career, and joined the operatic troupe conducted by Reinhard Keiser, in whose orchestra Handel had played the second violin some years before. Hasse's success led to an engagement at the court theatre of Brunswick, and it was there that, in 1723, he made his début as a composer with the opera *Antigonus*. The success of this first work induced the duke to send Hasse to Italy for the completion of his studies, and in 1724 he went to Naples and placed himself under Porpora, with whom, however, he seems to have disagreed both as a man and as an artist. On the other hand he gained the friendship of Alessandro Scarlatti, to whom he owed his first commission for a serenade for two voices, sung at a family celebration of a wealthy merchant by two of the greatest singers of Italy, Farinelli and Signora Tesi. This event established Hasse's fame; he soon became very popular, and his opera *Sesostrato*, written for the Royal Opera at Naples in 1726, made his name known all over Italy. At Venice, where he went in 1727, he became acquainted with the celebrated singer Faustina Bordogni (born at Venice in 1700), who became the composer's wife in 1730. The two artists soon afterwards went to Dresden, in compliance with a brilliant offer made to them by the splendour-loving elector of Saxony, Augustus II. There Hasse remained for two years, after which he again journeyed to Italy, and also in 1733 to London, in which latter city he was tempted by the aristocratic clique inimical to Handel to become the rival and antagonist of that great master. But this he modestly and wisely declined, remaining in London only long enough to superintend the rehearsals for his opera *Artaserse* (first produced at Venice, 1730). All this while Faustina had remained at Dresden, the declared favourite of the public and unfortunately also of the elector, nor was her husband, who remained attached to her, allowed to see her except at long intervals. In 1739, after the death of Augustus II., Hasse settled permanently at Dresden till 1763, when he and his wife retired from court service with considerable pensions. But Hasse was still too young to rest on his laurels. He went with his family to Vienna, and added several operas to the great number of his works already in existence. His last work for the stage was the opera *Ruggiero* (1771), written for the wedding of Archduke Ferdinand at Milan. On the same occasion a work by Mozart, then fourteen years old, was performed, and Hasse observed "this youngster will surpass us all." By desire of his wife Hasse settled at her birthplace Venice, and there he died on the 23rd of December 1783. His compositions include as many as 120 operas, besides oratorios, cantatas, masses, and almost every variety of instrumental music. During the siege of Dresden by the Prussians in 1760, most of his manuscripts, collected for a complete edition to be brought out at the expense of the elector, were burnt. Some of his works, amongst them an opera *Alcide al Bivio* (1760), have been published, and the libraries of Vienna and Dresden possess the autographs of others. Hasse's instrumentation is certainly not above the low level attained by the average musicians of his time, and his *ensembles* do not present any features of interest. In dramatic fire also he was wanting, but he had a fund of gentle and genuine melody, and by this fact his enormous popularity during his life must be accounted for. The two airs which Farinelli had to repeat every day for ten years to the melancholy king of Spain, Philip V., were both from Hasse's works. Of Faustina Hasse it will be sufficient to add that she was, according to the unanimous verdict of the critics (including Dr Burney), one of the greatest singers of a time rich in vocal artists. The year of her death is not exactly known. Most probably it shortly preceded that of her husband.

HASSELQUIST, FREDERIK (1722-1752), Swedish traveller and naturalist, was born at Törnevalla, East Gothland, on the 3rd of January 1722. On account of the frequently expressed regrets of Linnaeus, under whom he studied at Upsala, at the lack of information regarding the natural history of Palestine, Hasselquist resolved to undertake a journey to that country, and a sufficient subscription having been obtained to defray expenses, he reached Smyrna towards the end of 1749. He visited parts of Asia Minor, Egypt, Cyprus and Palestine, making large natural history collections, but his constitution, naturally weak, gave way under the fatigues of travel, and he died near Smyrna on the 9th of February 1752 on his way home. His collections reached home in safety, and five years after his death his notes were published by Linnaeus under the title *Resa till Heliga Landet förättad från år 1749 till 1752*, which was translated into French and German in 1762 and into English in 1766.

HASSELT, ANDRÉ HENRI CONSTANT VAN (1806-1874), Belgian poet, was born at Maastricht, in Limburg, on the 5th of January 1806. He was educated in his native town, and at the university of Liége. In 1833 he left Maastricht, then blockaded by the Belgian forces, and made his way to Brussels, where he became a naturalized Belgian, and was attached to the Bibliothèque de Bourgogne. In 1843 be entered the education department, and eventually became an inspector of normal schools. His native language was Dutch, and as a French poet André van Hasselt had to overcome the difficulties of writing in a foreign language. He had published a *Chant hellénique* in honour of Canaris in the columns of *La Sentinelle des Pays-Bas* as early as 1826, and other poems followed. His first volume of verse, *Primevères* (1834), shows markedly the influence of Victor Hugo, which had been strengthened by a visit to Paris in 1830. His relations with Hugo became intimate in 1851-1852, when the poet was an exile in Brussels. In 1839 he became editor of the *Renaissance*, a paper founded to encourage the fine arts. His chief work, the epic of the *Quatre Incarnations du Christ*, was published in 1867. In the same volume were printed his *Études rythmiques*, a series of metrical experiments designed to show that the French language could be adapted to every kind of musical rhythm. With the same end in view he executed translations of many German songs, and wrote new French libretti for the best-known operas of Mozart, Weber and others. Hasselt died at Saint Josse ten Noode, a suburb of Brussels, on the 1st of December 1874.

A selection from his works (10 vols., Brussels, 1876-1877) was edited by MM. Charles Hen and Louis Alvin. He wrote many books for children, chiefly under the pseudonym of Alfred Avelines; and studies on historical and literary subjects. The books written in collaboration with Charles Hen are signed Charles André. A bibliography of his writings is appended to the notice by Louis Alvin in the *Biographie nat. de Belgique*, vol. vii. Van Hasselt's fame has continued to increase since his death. A series of tributes to his memory are printed in the *Poésies choisies* (1901), edited by M. Georges Barral for the *Collection des poètes français de l'étranger*. This book contains a biographical and critical study by Jules Guillaume, and some valuable notes on the poet's theories of rhythm.

HASSELT, the capital of the Belgian province of Limburg. Pop. (1904), 16,179. It derives its name from *Hazel-bosch* (hazel wood). It stands at the junction of several important roads and railways from Maaseyck, Maastricht and Liége. It has many breweries and distilleries, and the spirit known by its name, which is a coarse gin, has a certain reputation throughout Belgium. On the 6th of August 1831 the Dutch troops obtained here their chief success over the Belgian nationalists during the War of Independence. Hasselt is best known for its great septennial fête held on the day of Assumption, August 15th. The curious part of this fête, which is held in honour of the Virgin under the name of Virga Jesse, is the conversion of the town for the day into the semblance of a forest. Fir trees and branches from the neighbouring forest are collected and planted in front of the houses, so that for a few hours Hasselt has the appearance of being restored to its primitive condition as a wood. The figure of the giant who is supposed to have once held the Hazel-bosch under his terror is paraded on this occasion as the "lounge man." Originally this celebration was held annually, but in the 18th century it was restricted to once in seven years. There was a celebration in 1905.

HASSENPFLUG, HANS DANIEL LUDWIG FRIEDRICH (1794-1862), German statesman, was born at Hanau in Hesse on the 26th of February 1794. He studied law at Göttingen, graduated in 1816, and took his seat as *Assessor* in the judicial chamber of the board of government (*Regierungskollegium*) at Cassel, of which his father Johann Hassenpflug was also a member. In 1821 he was nominated by the new elector, William II., *Justizrat* (councillor of justice); in 1832 he became *Ministerialrat* and reporter (*Referent*) to the ministry of Hesse-Cassel, and in May of the same year was appointed successively minister of justice and of the interior. It was from this moment that he became conspicuous in the constitutional struggles of Germany.

The reactionary system introduced by the elector William I. had broken down before the revolutionary movements of 1830, and in 1831 Hesse had received a constitution. This development was welcome neither to the elector nor to the other German governments, and Hassenpflug deliberately set to work to reverse it. In doing so he gave the lie to his own early promise; for he had been a conspicuous member of the revolutionary *Burschenschaft* at Göttingen, and had taken part as a volunteer in the War of Liberation. Into the causes of the change it is unnecessary to inquire; Hassenpflug by training and tradition was a strait-laced official; he was also a first-rate lawyer; and his naturally arbitrary temper had from the first displayed itself in an attitude of overbearing independence towards his colleagues and even towards the elector. To such a man constitutional restrictions were intolerable, and from the moment he came into power he set to work to override them, by means of press censorship, legal quibbles, unjustifiable use of the electoral prerogatives, or frank supersession of the legislative rights of the Estates by electoral ordinances. The story of the constitutional deadlock that resulted belongs to the history of Hesse-Cassel and Germany; so far as Hassenpflug himself was concerned, it made him, more even than Metternich, the Mephistopheles of the Reaction to the German people. In Hesse itself he was known as "Hessen's Hass und Fluch" (Hesse's hate and curse). In the end, however, his masterful temper became unendurable to the regent (Frederick William); in the summer of 1837 he was suddenly removed from his post as minister of the interior and he thereupon left the elector's service.

In 1838 he was appointed head of the administration of the little principality of Hohenzollern-Sigmaringen, an office which he exchanged in the following year for that of civil governor of the grand-duchy of Luxemburg. Here, too, his independent character suffered him to remain only a year: he resented having to transact all business with the grand-duke (king of the Netherlands) through a Dutch official at the Hague; he protested against the absorption of the Luxemburg surplus in the Dutch treasury; and, failing to obtain redress, he resigned (1840). From 1841 to 1850 he was in Prussian service, first as a member of the supreme court of justice (*Obertribunal*) and then (1846) as president of the high court of appeal (*Oberappellationsgericht*) at Greifswald. In 1850 he was tried for peculation and convicted; and, though this judgment was reversed on appeal, he left the service of

Prussia.

With somewhat indecent haste (the appeal had not been heard) he was now summoned by the elector of Hesse once more to the head of the government, and he immediately threw himself again with zeal into the struggle against the constitution. He soon found, however, that the opinion of all classes, including the army, was solidly against him, and he decided to risk all on an alliance with the reviving fortunes of Austria, which was steadily working for the restoration of the *status quo* overthrown by the revolution of 1848. On his advice the elector seceded from the Northern Union established by Prussia and, on the 13th of September, committed the folly of flying secretly from Hesse with his minister. They went to Frankfort, where the federal diet had been re-established, and on the 21st persuaded the diet to decree an armed intervention in Hesse. This decree, carried out by Austrian troops, all but led to war with Prussia, but the unreadiness of the Berlin government led to the triumph of Austria and of Hassenpflug, who at the end of the year was once more installed in power at Cassel as minister of finance. His position was, however, not enviable; he was loathed and despised by all, and disliked even by his master. The climax came in November 1853, when he was publicly horse-whipped by the count of Isenburg-Wächtersbach, the elector's son-in-law. The count was pronounced insane; but Hassenpflug was conscious of the method in his madness, and tendered his resignation. This was, however, not accepted; and it was not till the 16th of October 1855 that he was finally relieved of his offices. He retired to Marburg, where he died on the 15th of October 1862. He lived just long enough to hear of the restoration of the Hesse constitution of 1831 (June 21, 1862), which it had been his life's mission to destroy. Of his publications the most important is *Actenstücke, die landständischen Anklagen wider den Kurfürstlichen hessischen Staatsminister Hassenpflug. Ein Beitrag zur Zeitgeschichte und zum neueren deutschen Staatsrechte*, anonym. (Stuttgart and Tübingen, 1836). He was twice married, his first wife being the sister of the brothers Grimm. His son Karl Hassenpflug (1824-1890) was a distinguished sculptor.

See the biography by Wippermann in *Allgemeine deutsche Biographie*, with authorities.

HASTINAPUR, an ancient city of British India, in the Meerut district of the United Provinces, lying on the bank of a former bed of the Ganges, 22 m. N.E. of Meerut. It formed the capital of the great Pandava kingdom, celebrated in the *Mahābhārata*, and probably one of the earliest Aryan settlements outside the Punjab. Tradition points to a group of shapeless mounds as the residence of the Lunar princes of the house of Bharata whose deeds are commemorated in the great national epic. After the conclusion of the famous war which forms the central episode of that poem, Hastinapur remained for some time the metropolis of the descendants of Parikshit, but the town was finally swept away by a flood of the Ganges, and the capital was transferred to Kausambi.

HASTINGS, a famous English family. John, Baron Hastings (*c.* 1262-*c.* 1313), was a son of Sir Henry de Hastings (d. 1268), who was summoned to parliament as a baron by Simon de Montfort in 1264. Having joined Montfort's party Sir Henry led the Londoners at the battle of Lewes and was taken prisoner at Evesham. After his release he continued his opposition to Henry III.; he was among those who resisted the king at Kenilworth, and after the issue of the *Dictum de Kenilworth* he commanded the remnants of the baronial party when they made their last stand in the isle of Ely, submitting to Henry in July 1267. His younger son, Edmund, was specially noted for his military services in Scotland during the reign of Edward I. John Hastings married Isabella (d. 1305), daughter of William de Valence, earl of Pembroke, a half-brother of Henry III., and fought in Scotland and in Wales. Through his mother, Joanna de Cantilupe, he inherited the extensive lordship of Abergavenny, hence he is sometimes referred to as lord of Bergavenny, and in 1295 he was summoned to parliament as a baron. Before this date, however, he had come somewhat prominently to the front. His paternal grandmother, Ada, was a younger daughter of David, earl of Huntingdon, and a niece of the Scottish king, William the Lion; and in 1290 when Margaret, the maid of Norway, died, Hastings came forward as a claimant for the vacant throne. Although unsuccessful in the matter he did not swerve from his loyalty to Edward I. He fought constantly either in France or in Scotland; he led the bishop of Durham's men at the celebrated siege of Carlaverock castle in 1300; and with his brother Edmund he signed the letter which in 1301 the English barons sent to Pope Boniface VIII. repudiating papal interference in the affairs of Scotland; on two occasions he represented the king in Aquitaine. Hastings died in 1312 or 1313. His second wife was Isabella, daughter of the elder Hugh le Despenser. Hastings, who was one of the most wealthy and powerful nobles of his time, stood high in the regard of the king and is lauded by the chroniclers.

His eldest son John (d. 1325), who succeeded to the barony, was the father of Laurence Hastings, who was created earl of Pembroke in 1339, the earls of Pembroke retaining the barony of Hastings until 1389. A younger son by a second marriage, Sir Hugh Hastings (*c.* 1307-1347), saw a good deal of military service in France; his portrait and also that of his wife may still be seen on the east window of Elsing church, which contains a beautiful brass to his memory.

On the death of John, the third and last earl of Pembroke of the Hastings family, in 1389, Sir Hugh's son John had, according to a decision of the House of Lords in 1840, a title to the barony of Hastings, but he did not prosecute his claim and he died without sons in 1393. However his grand-nephew and heir, Hugh (d. 1396), claimed the barony, which was also claimed by Reginald, Lord Grey of Ruthyn. Like the earls of Pembroke, Grey was descended through his grandmother, Elizabeth Hastings, from John, Lord Hastings, by his first wife; Hugh, on the other hand, was descended from John's second wife. After Hugh's death his brother, Sir Edward Hastings (*c.* 1382-1438), claimed the barony, and the case as to who should bear the arms of the Hastings family came before the court of chivalry. In 1410 it was decided in favour of Grey, who thereupon assumed the arms. Both disputants still claimed the barony, but the view seems to have prevailed that it had fallen into abeyance in 1389. Sir Edward was imprisoned for refusing to pay his rival's costs, and he was probably still in prison when he died

in January 1438. After his death the Hastings family, which became extinct during the 16th century, tacitly abandoned the claim to the barony. Then in 1840 the title was revived in favour of Sir Jacob Astley, Bart. (1797-1859), who derived his claim from a daughter of Sir Hugh Hastings who died in 1540. Sir Jacob's descendant, Albert Edward (b. 1882), became 21st Baron Hastings in 1904.

A distant relative of the same family was William, Baron Hastings (*c.* 1430-1483), a son of Sir Leonard Hastings (d. 1455). He became attached to Edward IV., whom he served before his accession to the throne, and after this event he became master of the mint, chamberlain of the royal household and one of the king's most trusted advisers. Having been made a baron in 1461, he married Catherine, daughter of Richard Neville, earl of Salisbury, and was frequently sent on diplomatic errands to Burgundy and elsewhere. He was faithful to Edward IV. during the king's exile in the winter of 1470-1471, and after his return he fought for him at Barnet and at Tewkesbury; he has been accused of taking part in the murder of Henry VI.'s son, prince Edward, after the latter battle. Hastings succeeded his sovereign in the favour of Jane Shore. He was made captain of Calais in 1471, and was with Edward IV. when he met Louis XI. of France at Picquigny in 1475, on which occasion he received gifts from Louis and from Charles the Bold of Burgundy. After Edward IV.'s death Hastings behaved in a somewhat undecided manner. He disliked the queen, Elizabeth Woodville, but he refused to ally himself with Richard, duke of Gloucester, afterwards King Richard III. Suddenly Richard decided to get rid of him, and during a meeting of the council on the 13th of June 1483 he was seized and at once put to death. This dramatic incident is related by Sir Thomas More in his *History of Richard III.*, and has been worked by Shakespeare into his play *Richard III.* Hastings is highly praised by his friend Philippe de Commines, and also by More. He left a son, Edward (d. 1508), the father of George, Baron Hastings (*c.* 1488-1545), who was created earl of Huntingdon (*q.v.*) in 1529.

When Francis, 10th earl of Huntingdon, died in October 1789, the barony of Hastings passed to his sister Elizabeth (1731-1808), wife of John Rawdon, earl of Moira, and from her it came to her son Francis Rawdon-Hastings (see below), who was created marquess of Hastings in 1817.

HASTINGS, FRANCIS RAWDON-HASTINGS, 1st Marquess of (1754-1826), British soldier and governor-general of India, born on the 9th of December 1754, was the son of Sir John Rawdon of Moira in the county of Down, 4th baronet, who was created Baron Rawdon of Moira, and afterwards earl of Moira, in the Irish peerage. His mother was the Lady Elizabeth Hastings, daughter of Theophilus, 9th earl of Huntingdon. Lord Rawdon, as he was then called, was educated at Harrow and Oxford, and joined the army in 1771 as ensign in the 15th foot. His life henceforth was entirely spent in the service of his country, and may be divided into four periods: from 1775 to 1782 he was engaged with much distinction in the American war; from 1783 to 1813 he held various high appointments at home, and took an active part in the business of the House of Lords; from 1813 to 1823 was the period of his labours in India; after retiring from which, in the last years of his life (1824-1826), he was governor of Malta.

In America Rawdon served at the battles of Bunker Hill, Brooklyn, White Plains, Monmouth and Camden, at the attacks on Forts Washington and Clinton, and at the siege of Charleston. In fact he was engaged in many important operations of the war. Perhaps his most noted achievements were the raising of a corps at Philadelphia, called the Irish Volunteers, who under him became famous for their fighting qualities, and the victory of Hobkirk's Hill, which, in command of only a small force, he gained by superior military skill and determination against a much larger body of Americans. In 1781 he was invalided. The vessel in which he returned to England was captured and carried into Brest. He was speedily released, and on his arrival in England was much honoured by George III., who created him an English peer (Baron Rawdon) in March 1783. In 1789 his mother succeeded to the barony of Hastings, and Rawdon added the surname of Hastings to his own.

In 1793 Rawdon succeeded his father as earl of Moira. In 1794 he was sent with 7000 men to Ostend to reinforce the duke of York and the allies in Flanders. The march by which he effected a junction was considered extraordinary. In 1803 he was appointed commander-in-chief in Scotland, and in 1804 he married Flora Mure Campbell, countess of Loudoun in her own right. When Fox and Grenville came into power in 1806, Lord Moira, who had always voted with them, received the place of master-general of the ordnance. He was now enabled to carry a philanthropic measure, of which from his first entry into the House of Lords he had been a great promoter, namely, the Debtor and Creditor Bill for relief of poor debtors. Ireland was another subject to which he had given particular attention: in 1797 there was published a *Speech by Lord Moira on the Dreadful and Alarming State of Ireland*. Lord Moira's sound judgment on public affairs, combined with his military reputation and the uprightness of his character, won for him a high position among the statesmen of the day, and he gained an additional *prestige* from his intimate relations with the prince of Wales. As a mark of the regent's regard Lord Moira received the order of the Garter in 1812, and in the same year was appointed governor-general of Bengal and commander-in-chief of the forces in India. He landed at Calcutta, and assumed office in succession to Lord Minto in October 1813. One of the chief questions which awaited him was that of relations with the Gurkha state of Nepal. The Gurkhas, a brave and warlike little nation, failing to extend their conquests in the direction of China, had begun to encroach on territories held or protected by the East India Company; especially they had seized the districts of Batwal and Seoraj, in the northern part of Oudh, and when called upon to relinquish these, they deliberately elected (April 1814) to go to war rather than do so. Lord Moira, having travelled through the northern provinces and fully studied the question, declared war against Nepal (November 1814). The enemy's frontier was 600 m. long, and Lord Moira, who directed the plan of the campaign, resolved to act offensively along the whole line. It was an anxious undertaking, because the native states of India were all watching the issue and waiting for any serious reverse to the English to join against them. At first all seemed to go badly, as the British officers despised the enemy, and the sepoys were unaccustomed to mountain warfare, and thus alternate extremes of rashness and despondency were exhibited. But this rectified itself in time, especially through the achievements of General (afterwards Sir David) Ochterlony, who before the end of 1815 had taken all the Gurkha posts to the west, and early in 1816 was advancing victoriously within 50 m. of Khatmandu, the capital. The Gurkhas now made peace; they abandoned the disputed districts, ceded some territory to the British, and agreed to receive a British resident. For his masterly conduct of these affairs Lord Moira was created marquess of Hastings in February 1817.

He had now to deal with internal dangers. A combination of Mahratta powers was constantly threatening the continuance of British rule, under the guise of plausible assurances severally given by the peshwa, Sindhia, Holkar and other princes. At the same time the existence of the Pindari state was not only dangerous to the British, as being a warlike power always ready to turn against them, but it was a scourge to India itself. In 1816, however, the Pindaris entered British territory in the Northern Circars, where they destroyed 339 villages. On this, permission was obtained to act for their suppression. Before the end of 1817 the preparations of Lord Hastings were completed, when the peshwa suddenly broke into war, and the British were opposed at once to the Mahratta and Pindari powers, estimated at 200,000 men and 500 guns. Both were utterly shattered in a brief campaign of four months (1817-18). The peshwa's dominions were annexed, and those of Sindhia, Holkar, and the raja of Berar lay at the mercy of the governor-general, and were saved only by his moderation. Thus, after sixty years from the battle of Plassey, the supremacy of British power in India was effectively established. The Pindaris had ceased to exist, and peace and security had been substituted for misery and terror.

> "It is a proud phrase to use," said Lord Hastings, "but it is a true one, that we have bestowed blessings upon millions. Nothing can be more delightful than the reports I receive of the sensibility manifested by the inhabitants to this change in their circumstances. The smallest detachment of our troops cannot pass through that district without meeting everywhere eager and exulting gratulations, the tone of which proves them to come from glowing hearts. Multitudes of people have, even in this short interval, come from the hills and fastnesses in which they had sought refuge for years, and have reoccupied their ancient deserted villages. The ploughshare is again in every quarter turning up a soil which had for many seasons never been stirred, except by the hoofs of predatory cavalry."

While the natives of India appreciated the results of Lord Hastings's achievements, the court of directors grumbled at his having extended British territory. They also disliked and opposed his measures for introducing education among the natives and his encouraging the freedom of the press. In 1819 he obtained the cession by purchase of the island of Singapore. In finance his administration was very successful, as notwithstanding the expenses of his wars he showed an annual surplus of two millions sterling. Brilliant and beneficent as his career had been, Lord Hastings did not escape unjust detraction. His last years of office were embittered by the discussions on a matter notorious at the time, namely, the affairs of the banking-house of W. Palmer and Company. The whole affair was mixed up with insinuations against Lord Hastings, especially charging him with having been actuated by favouritism towards one of the partners in the firm. From imputations which were inconsistent with his whole character he has subsequently been exonerated. But while smarting under them he tendered his resignation in 1821, though he did not leave India till the first day of 1823. He was much exhausted by the arduous labours which for more than nine years he had sustained. Among his characteristics it is mentioned that "his ample fortune absolutely sank under the benevolence of his nature"; and, far from having enriched himself in the appointment of governor-general, he returned to England in circumstances which obliged him still to seek public employment. In 1824 he received the comparatively small post of governor of Malta, in which island he introduced many reforms and endeared himself to the inhabitants. He died on the 28th of November 1826, leaving a request that his right hand should be cut off and preserved till the death of the marchioness of Hastings, and then be interred in her coffin.

Hastings was succeeded by his son, Francis George Augustus (1808-1844), who in 1840 succeeded through his mother to the earldom of Loudoun. When his second son, Henry Weysford, the 4th marquess, died childless on the 10th of November 1868 the marquessate became extinct; the earldom of Loudoun devolved upon his sister, Edith Mary (d. 1874), wife of Charles Frederick Abney-Hastings, afterwards Baron Donington; the barony of Hastings, which fell into abeyance, was also revived in 1871 in her favour.

> See Ross-of-Bladensburg, *The Marquess of Hastings* ("Rulers of India" series) (1893); and *Private Journal of the Marquess of Hastings*, edited by his daughter, the marchioness of Bute (1858).

HASTINGS, FRANK ABNEY (1794-1828), British naval officer and Philhellene, was the son of Lieut.-general Sir Charles Hastings, a natural son of Francis Hastings, tenth earl of Huntingdon. He entered the navy in 1805, and was in the "Neptune" (100) at the battle of Trafalgar; but in 1820 a quarrel with his flag captain led to his leaving the service. The revolutionary troubles of the time offered chances of foreign employment. Hastings spent a year on the continent to learn French, and sailed for Greece on the 12th of March 1822 from Marseilles. On the 3rd of April he reached Hydra. For two years he took part in the naval operations of the Greeks in the Gulf of Smyrna and elsewhere. He saw that the light squadrons of the Greeks must in the end be overpowered by the heavier Turkish navy, clumsy as it was; and in 1823 he drew up and presented to Lord Byron a very able memorandum which he laid before the Greek government in 1824. This paper is of peculiar interest apart from its importance in the Greek insurrection, for it contains the germs of the great revolution which has since been effected in naval gunnery and tactics. In substance the memorandum advocated the use of steamers in preference to sailing ships, and of direct fire with shells and hot shot, as a more trustworthy means of destroying the Turkish fleet than fire-ships. It will be found in Finlay's *History of the Greek Revolution*, vol. ii. appendix i. The application of Hastings's ideas led necessarily to the disuse of sailing ships, and the introduction of armour. The incompetence of the Greek government and the corrupt waste of its resources prevented the full application of Hastings's bold and far-seeing plans. But largely by the use of his own money, of which he is said to have spent £7000, he was able to some extent to carry them out. In 1824 he came to England to obtain a steamer, and in 1825 he had fitted out a small steamer named the "Karteria" (Perseverance), manned by Englishmen, Swedes and Greeks, and provided with apparatus for the discharge of shell and hot shot. He did enough to show that if his advice had been vigorously followed the Turks would have been driven off the sea long before the date of the battle of Navarino. The great effect produced by his shells in an attack on the sea-line of communication of the Turkish army, then besieging Athens at Oropus and Volo in March and April 1827, was a clear proof that much more could have been done. Military mismanagement caused the defeat of the Greeks round Athens. But Hastings, in co-operation with General Sir R. Church (*q.v.*), shifted the scene of the attack to western Greece. Here his destruction of a small Turkish squadron at Salona Bay in the Gulf of Corinth (29th of September 1827) provoked Ibrahim Pasha into the aggressive movements which led to the destruction of his fleet by the allies at

Navarino (*q.v.*) on the 20th of October 1827. On the 25th of May 1828 he was wounded in an attack on Anatolikon, and he died in the harbour of Zante on the 1st of June. General Gordon, who served in the war and wrote its history, says of him: “If ever there was a disinterested and really useful Philhellene it was Hastings. He received no pay, and had expended most of his slender fortune in keeping the ‘Karteria’ afloat for the last six months. His ship, too, was the only one in the Greek navy where regular discipline was maintained.”

See Thomas Gordon, *History of the Greek Revolution* (London, 1832); George Finlay, *History of the Greek Revolution* (Edinburgh, 1861).

HASTINGS, WARREN (1732-1818), the first governor-general of British India, was born on the 6th of December 1732 in the little hamlet of Churchill in Oxfordshire. He came of a family which had been settled for many generations in the adjoining village of Daylesford; but his great-grandfather had sold the ancestral manor-house, and his grandfather had been unable to maintain himself in possession of the family living. His mother died a few days after giving him birth; his father, Pynaston Hastings, drifted away to perish obscurely in the West Indies. Thus unfortunate in his birth, young Hastings received the elements of education at a charity school in his native village. At the age of eight he was taken in charge by an elder brother of his father, Howard Hastings, who held a post in the customs. After spending two years at a private school at Newington Butts, he was moved to Westminster, where among his contemporaries occur the names of Lord Thurlow and Lord Shelburne, Sir Elijah Impey, and the poets Cowper and Churchill. In 1749, when his headmaster Dr Nichols was already anticipating for him a successful career at the university, his uncle died, leaving him to the care of a distant kinsman, Mr Creswicke, who was afterwards in the direction of the East India Company; and he determined to send his ward to seek his fortune as a “writer” in Bengal.

When Hastings landed at Calcutta in October 1750 the affairs of the East India Company were at a low ebb. Throughout the entire south of the peninsula French influence was predominant. The settlement of Fort St George or Madras, captured by force of arms, had only recently been restored in accordance with a clause of the peace of Aix-la-Chapelle. The organizing genius of Dupleix everywhere overshadowed the native imagination, and the star of Clive had scarcely yet risen above the horizon. The rivalry between the English and the French, which had already convulsed the south, did not penetrate to Bengal. That province was under the able government of Ali Vardi Khan, who peremptorily forbade the foreign settlers at Calcutta and Chandernagore to introduce feuds from Europe. The duties of a young “writer” were then such as are implied in the name. At an early date Hastings was placed in charge of an *aurang* or factory in the interior, where his duties would be to superintend the weaving of silk and cotton goods under a system of money advances. In 1753 he was transferred to Cossimbazar, the river-port of the native capital of Murshidabad. In 1756 the old nawab died, and was succeeded by his grandson Surajud-Dowlah, a young madman of 19, whose name is indelibly associated with the tragedy of the Black Hole. When that passionate young prince, in revenge for a fancied wrong, resolved to drive the English out of Bengal, his first step was to occupy the fortified factory at Cossimbazar, and make prisoners of Hastings and his companions. Hastings was soon released at the intercession of the Dutch resident, and made use of his position at Murshidabad to open negotiations with the English fugitives at Falta, the site of a Dutch factory near the mouth of the Hugli. In later days he used to refer with pride to his services on this occasion, when he was first initiated into the wiles of Oriental diplomacy. After a while he found it necessary to fly from the Mahommedan court and join the main body of the English at Falta. When the relieving force arrived from Madras under Colonel Clive and Admiral Watson, Hastings enrolled himself as a volunteer, and took part in the action which led to the recovery of Calcutta. Clive showed his appreciation of Hastings’s merits by appointing him in 1758 to the important post of resident at the court of Murshidabad. It was there that he first came into collision with the Bengali Brahman, Nuncomar, whose subsequent fate has supplied more material for controversy than any other episode in his career. During his three years of office as resident he was able to render not a few valuable services to the Company; but it is more important to observe that his name nowhere occurs in the official lists of those who derived pecuniary profit from the necessities and weakness of the native court. In 1761 he was promoted to be member of council, under the presidency of Mr Vansittart, who had been introduced by Clive from Madras. The period of Vansittart’s government has been truly described as “the most revolting page of our Indian history.” The entire duties of administration were suffered to remain in the hands of the nawab, while a few irresponsible English traders had drawn to themselves all real power. The members of council, the commanders of the troops, and the commercial residents plundered on a grand scale. The youngest servant of the Company claimed the right of trading on his own account, free from taxation and from local jurisdiction, not only for himself but also for every native subordinate whom he might permit to use his name. It was this exemption, threatening the very foundations of the Mussulman government, that finally led to a rupture with the nawab. Macaulay, in his celebrated essay, has said that “of the conduct of Hastings at this time little is known.” As a matter of fact, the book which Macaulay was professing to review describes at length the honourable part consistently taken by Hastings in opposition to the great majority of the council. Sometimes in conjunction only with Vansittart, sometimes absolutely alone, he protested unceasingly against the policy and practices of his colleagues. On one occasion he was stigmatized in a minute by Mr Batson with “having espoused the nawab’s cause, and as a hired solicitor defended all his actions, however dishonourable and detrimental to the Company.” An altercation ensued. Batson gave him the lie and struck him in the council chamber. When war was actually begun, Hastings officially recorded his previous resolution to have resigned, in order to repudiate responsibility for measures which he had always opposed. Waiting only for the decisive victory of Buxar over the allied forces of Bengal and Oudh, he resigned his seat and sailed for England in November 1764.

After fourteen years’ residence in Bengal Hastings did not return home a rich man, estimated by the opportunities of his position. According to the custom of the time he had augmented his slender salary by private trade. At a later date he was charged by Burke with having taken up profitable contracts for supplying bullocks for the use of the Company’s troops. It is admitted that he conducted by means of agents a large business in timber in the Gangetic Sundarbans. When at Falta he had married Mrs Buchanan, the widow of an officer. She bore him two children, of whom one died in infancy at Murshidabad, and was shortly followed to the grave by her mother. Their common gravestone is in existence at the present day, bearing date July 11, 1759. The other child, a son, was sent to England, and also died shortly before his father’s return. While at home Hastings is said to

have attached himself to literary society; and it may be inferred from his own letters that he now made the personal acquaintance of Samuel Johnson and Lord Mansfield. In 1766 he was called upon to give evidence before a committee of the House of Commons upon the affairs of Bengal. The good sense and clearness of the views which he expressed caused attention to be paid to his desire to be again employed in India. His pecuniary affairs were embarrassed, partly from the liberality with which he had endowed his few surviving relatives. The great influence of Lord Clive was also exercised on his behalf. At last, in the winter of 1768, he received the appointment of second in council at Madras. Among his companions on his voyage round the Cape were the Baron Imhoff, a speculative portrait-painter, and his wife, a lady of some personal attractions and great social charm, who was destined henceforth to be Hastings's lifelong companion. Of his two years' work at Madras it is needless to speak in detail. He won the good-will of his employers by devoting himself to the improvement of their manufacturing business, and he kept his hands clean from the prevalent taint of pecuniary transactions with the nawab of the Carnatic. One fact of some interest is not generally known. He drew up a scheme for the construction of a pier at Madras, to avoid the dangers of landing through the surf, and instructed his brother-in-law in England to obtain estimates from the engineers Brindley and Smeaton.

In the beginning of 1772 his ambition was stimulated by the nomination to the second place in council in Bengal with a promise of the reversion of the governorship when Mr Cartier should retire. Since his departure from Bengal in 1764 the situation of affairs in that settlement had scarcely improved. The second governorship of Clive was marked by the transfer of the dīwānī or financial administration from the Mogul emperor to the Company, and by the enforcement of stringent regulations against the besetting sin of peculation. But Clive was followed by two inefficient successors; and in 1770 occurred the most terrible Indian famine on record, which is credibly estimated to have swept away one-third of the population. In April 1772 Warren Hastings took his seat as president of the council at Fort William. His first care was to carry out the instructions received from home, and effect a radical reform in the system of government. Clive's plan of governing through the agency of the native court had proved a failure. The directors were determined "to stand forth as *dīwān*, and take upon themselves by their own servants the entire management of the revenues." All the officers of administration were transferred from Murshidabad to Calcutta, which Hastings boasted at this early date that he would make the first city in Asia. This reform involved the ruin of many native reputations, and for a second time brought Hastings into collision with the wily Brahman, Nuncomar. At the same time a settlement of the land revenue on leases for five years was begun, and the police and military systems of the country were placed upon a new footing. Hastings was a man of immense industry, with an insatiable appetite for detail. The whole of this large series of reforms was conducted under his own personal supervision, and upon no part of his multifarious labours did he dwell in his letters home with greater pride. As an independent measure of economy, the stipend paid to the titular nawab of Bengal, who was then a minor, was reduced by one-half—to sixteen *lakhs* a year (say £160,000). Macaulay imputes this reduction to Hastings as a characteristic act of financial immorality; but in truth it had been expressly enjoined by the court of directors, in a despatch dated six months before he took up office. His pecuniary bargains with Shuja-ud-Dowlah, the nawab wazīr of Oudh, stand on a different basis. Hastings himself always regarded them as incidents in his general scheme of foreign policy. The Mahrattas at this time had got possession of the person of the Mogul emperor, Shah Alam, from whom Clive obtained the grant of Bengal in 1765, and to whom he assigned in return the districts of Allahabad and Kora and a tribute of £300,000. With the emperor in their camp, the Mahrattas were threatening the province of Oudh, and causing a large British force to be cantoned along the frontier for its defence. Warren Hastings, as a deliberate measure of policy, withheld the tribute due to the emperor, and resold Allahabad and Kora to the wazīr of Oudh. The Mahrattas retreated, and all danger for the time was dissipated by the death of their principal leader. The wazīr now bethought him that he had a good opportunity for satisfying an old quarrel against the adjoining tribe of Rohillas, who had played fast and loose with him while the Mahratta army was at hand. The Rohillas were a race of Afghan origin, who had established themselves for some generations in a fertile tract west of Oudh, between the Himalayas and the Ganges, which still bears the name of Rohilkhand. They were not so much the occupiers of the soil as a dominant caste of warriors and freebooters. But in those troubled days their title was as good as any to be found in India. After not a little hesitation, Hastings consented to allow the Company's troops to be used to further the ambitious designs of his Oudh ally, in consideration of a sum of money which relieved the ever-pressing wants of the Bengal treasury. The Rohillas were defeated in fair fight. Some of them fled the country, and so far as possible Hastings obtained terms for those who remained. The fighting, no doubt, on the part of the wazīr was conducted with all the savagery of Oriental warfare; but there is no evidence that it was a war of extermination.

Meanwhile, the affairs of the East India Company had come under the consideration of parliament. The Regulating Act, passed by Lord North's ministry in 1773, effected considerable changes in the constitution of the Bengal government. The council was reduced to four members with a governor-general, who were to exercise certain indefinite powers of control over the presidencies of Madras and Bombay. Hastings was named in the act as governor-general for a term of five years. The council consisted of General Clavering and the Hon. Colonel Monson, two third-rate politicians of considerable parliamentary influence; Philip Francis (*q.v.*), then only known as an able permanent official; and Barwell, of the Bengal Civil Service. At the same time a supreme court of judicature was appointed, composed of a chief and three puisne judges, to exercise an indeterminate jurisdiction at Calcutta. The chief-justice was Sir Elijah Impey, already mentioned as a schoolfellow of Hastings at Westminster. The whole tendency of the Regulating Act was to establish for the first time the influence of the crown, or rather of parliament, in Indian affairs. The new members of council disembarked at Calcutta on the 19th of October 1774; and on the following day commenced the long feud which scarcely terminated twenty-one years later with the acquittal of Warren Hastings by the House of Lords. Macaulay states that the members of council were put in ill-humour because their salute of guns was not proportionate to their dignity. In a contemporary letter Francis thus expresses the same petty feeling: "Surely Mr H. might have put on a ruffled shirt." Taking advantage of an ambiguous clause in their commission, the majority of the council (for Barwell uniformly sided with Hastings) forthwith proceeded to pass in review the recent measures of the governor-general. All that he had done they condemned; all that they could they reversed. Hastings was reduced to the position of a cipher at their meetings. After a time they lent a ready ear to detailed allegations of corruption brought against him by his old enemy Nuncomar. To charges from such a source, and brought in such a manner, Hastings disdained to reply, and referred his accuser to the supreme court. The majority of the council, in their executive capacity, resolved that the governor-general had been guilty of peculation, and ordered him to refund. A few days later Nuncomar was thrown into prison on a charge of forgery preferred by a private prosecutor, tried before the supreme court sitting in bar, found guilty by a jury of Englishmen and sentenced to be hanged. Hastings always maintained that he did not cause the charge to be instituted, and the legality of Nuncomar's trial

is thoroughly proved by Sir James Stephen. The majority of the council abandoned their supporter, who was executed in due course. He had forwarded a petition for reprieve to the council, which Clavering took care should not be presented in time, and which was subsequently burnt by the common hangman on the motion of Francis. While the strife was at its hottest, Hastings had sent an agent to England with a general authority to place his resignation in the hands of the Company under certain conditions. The agent thought fit to exercise that authority. The resignation was promptly accepted, and one of the directors was appointed to the vacancy. But in the meantime Colonel Monson had died, and Hastings was thus restored, by virtue of his casting vote, to the supreme management of affairs. He refused to ratify his resignation; and when Clavering attempted to seize on the governor-generalship, he judiciously obtained an opinion from the judges of the supreme court in his favour. From that time forth, though he could not always command an absolute majority in council, Hastings was never again subjected to gross insult, and his general policy was able to prevail.

A crisis was now approaching in foreign affairs which demanded all the experience and all the genius of Hastings for its solution. Bengal was prosperous, and free from external enemies on every quarter. But the government of Bombay had hurried on a rupture with the Mahratta confederacy at a time when France was on the point of declaring war against England, and when the mother-country found herself unable to subdue her rebellious colonists in America. Hastings did not hesitate to take upon his own shoulders the whole responsibility of military affairs. All the French settlements in India were promptly occupied. On the part of Bombay, the Mahratta war was conducted with procrastination and disgrace. But Hastings amply avenged the capitulation of Wargaon by the complete success of his own plan of operations. Colonel Goddard with a Bengal army marched across the breadth of the peninsula from the valley of the Ganges to the western sea, and achieved almost without a blow the conquest of Gujarat. Captain Popham, with a small detachment, stormed the rock fortress of Gwalior, then deemed impregnable and the key of central India; and by this feat held in check Sindhia, the most formidable of the Mahratta chiefs. The Bhonsla Mahratta raja of Nagpur, whose dominions bordered on Bengal, was won over by the diplomacy of an emissary of Hastings. But while these events were taking place, a new source of embarrassment had arisen at Calcutta. The supreme court, whether rightly or wrongly, assumed a jurisdiction of first instance over the entire province of Bengal. The English common law, with all the absurdities and rigours of that day, was arbitrarily extended to an alien system of society. *Zamíndárs*, or government renters, were arrested on mesne process; the sanctity of the *zenána*, or women's chamber, as dear to Hindus as to Mahommedans, was violated by the sheriff's officer; the deepest feelings of the people and the entire fabric of revenue administration were alike disregarded. On this point the entire council acted in harmony. Hastings and Francis went joint-bail for imprisoned natives of distinction. At last, after the dispute between the judges and the executive threatened to become a trial of armed force, Hastings set it at rest by a characteristic stroke of policy. A new judicial office was created in the name of the Company, to which Sir Elijah Impey was appointed, though he never consented to draw the additional salary offered to him. The understanding between Hastings and Francis, originating in this state of affairs, was for a short period extended to general policy. An agreement was come to by which Francis received patronage for his circle of friends, while Hastings was to be unimpeded in the control of foreign affairs. But a difference of interpretation arose. Hastings recorded in an official minute that he had found Francis's private and public conduct to be "void of truth and honour." They met as duellists. Francis fell wounded, and soon afterwards returned to England.

The Mahratta war was not yet terminated, but a far more formidable danger now threatened the English in India. The imprudent conduct of the Madras authorities had irritated beyond endurance the two greatest Mussulman powers in the peninsula, the nizam of the Deccan and Hyder Ali, the usurper of Mysore, who began to negotiate an alliance with the Mahrattas. A second time the genius of Hastings saved the British empire in the east. On the arrival of the news that Hyder had descended from the highlands of Mysore, cut to pieces the only British army in the field, and swept the Carnatic up to the gates of Madras, he at once adopted a policy of extraordinary boldness. He signed a blank treaty of peace with the Mahrattas, who were still in arms, reversed the action of the Madras government towards the nizam, and concentrated all the resources of Bengal against Hyder Ali. Sir Eyre Coote, a general of renown in former Carnatic wars, was sent by sea to Madras with all the troops and treasure that could be got together; and a strong body of reinforcements subsequently marched southwards under Colonel Pearse along the coast line of Orissa. The landing of Coote preserved Madras from destruction, though the war lasted through many campaigns and only terminated with the death of Hyder. Pearse's detachment was decimated by an epidemic of cholera (perhaps the first mention of this disease by name in Indian history); but the survivors penetrated to Madras, and not only held in check Bhonsla and the nizam, but also corroborated the lesson taught by Goddard—that the Company's sepoys could march anywhere, when boldly led. Hastings's personal task was to provide the ways and means for this exhausting war. A considerable economy was effected by a reform in the establishment for collecting the land tax. The government monopolies of opium and salt were then for the first time placed upon a remunerative basis. But these reforms were of necessity slow in their beneficial operation. The pressing demands of the military chest had to be satisfied by loans, and in at least one case from the private purse of the governor-general. Ready cash could alone fill up the void; and it was to the hoards of native princes that Hastings's fertile mind at once turned. Chait Sing, raja of Benares, the greatest of the vassal chiefs who had grown rich under the protection of the British rule, lay under the suspicion of disloyalty. The wazir of Oudh had fallen into arrears in the payment due for the maintenance of the Company's garrison posted in his dominions, and his administration was in great disorder. In his case the ancestral hoards were under the control of his mother, the begum of Oudh, into whose hands they had been allowed to pass at the time when Hastings was powerless in council. Hastings resolved to make a progress up country in order to arrange the affairs of both provinces, and bring back all the treasure that could be squeezed out of its holders by his personal intervention. When he reached Benares and presented his demands, the raja rose in insurrection, and the governor-general barely escaped with his life. But the faithful Popham rapidly rallied a force for his defence. The insurgents were defeated again and again; Chait Sing took to flight, and an augmented permanent tribute was imposed upon his successor. The Oudh business was managed with less risk. The wazir consented to everything demanded of him. The begum was charged with having abetted Chait Sing in his rebellion; and after the severest pressure applied to herself and her attendant eunuchs, a fine of more than a million sterling was exacted from her. Hastings appears to have been not altogether satisfied with the incidents of this expedition, and to have anticipated the censure which it received in England. As a measure of precaution, he procured documentary evidence of the rebellious intentions of the raja and the begum, to the validity of which Impey obligingly lent his extra-judicial sanction.

The remainder of Hastings's term of office in India was passed in comparative tranquillity, both from internal opposition and foreign war. The centre of interest now shifts to the India House and to the British parliament. The

long struggle between the Company and the ministers of the crown for the supreme control of Indian affairs and the attendant patronage had reached its climax. The decisive success of Hastings's administration alone postponed the inevitable solution. His original term of five years would have expired in 1778; but it was annually prolonged by special act of parliament until his voluntary resignation. Though Hastings was thus irremovable, his policy did not escape censure. Ministers were naturally anxious to obtain the reversion to his vacant post, and Indian affairs formed at this time the hinge on which party politics turned. On one occasion Dundas carried a motion in the House of Commons, censuring Hastings and demanding his recall. The directors of the Company were disposed to act upon this resolution; but in the court of proprietors, with whom the decision ultimately lay, Hastings always possessed a sufficient majority. Fox's India Bill led to the downfall of the Coalition ministry in 1783. The act which Pitt successfully carried in the following year introduced a new constitution, in which Hastings felt that he had no place. In February 1785 he finally sailed from Calcutta, after a dignified ceremony of resignation, and amid enthusiastic farewells from all classes.

On his arrival in England, after a second absence of sixteen years, he was not displeased with the reception he met with at court and in the country. A peerage was openly talked of as his due, while his own ambition pointed to some responsible office at home. Pitt had never taken a side against him, while Lord Chancellor Thurlow was his pronounced friend. But he was now destined to learn that his enemy Francis, whom he had discomfited in the council chamber at Calcutta, was more than his match in the parliamentary arena. Edmund Burke had taken the subject races of India under the protection of his eloquence. Francis, who had been the early friend of Burke, supplied him with the personal animus against Hastings, and with the knowledge of detail, which he might otherwise have lacked. The Whig party on this occasion unanimously followed Burke's lead. Dundas, Pitt's favourite subordinate, had already committed himself by his earlier resolution of censure; and Pitt was induced by motives which are still obscure to incline the ministerial majority to the same side. To meet the oratory of Burke and Sheridan and Fox, Hastings wrote an elaborate minute with which he wearied the ears of the House for two successive nights, and he subsidized a swarm of pamphleteers. The impeachment was decided upon in 1786, but the actual trial did not commence until 1788. For seven long years Hastings was upon his defence on the charge of "high crimes and misdemeanours." During this anxious period he appears to have borne himself with characteristic dignity, such as is consistent with no other hypothesis than the consciousness of innocence. At last, in 1795, the House of Lords gave a verdict of not guilty on all charges laid against him; and he left the bar at which he had so frequently appeared, with his reputation clear, but ruined in fortune. However large the wealth he brought back from India, all was swallowed up in defraying the expenses of his trial. Continuing the line of conduct which in most other men would be called hypocrisy, he forwarded a petition to Pitt praying that he might be reimbursed his costs from the public funds. This petition, of course, was rejected. At last, when he was reduced to actual destitution, it was arranged that the East India Company should grant him an annuity of £4000 for a term of years, with £90,000 paid down in advance. This annuity expired before his death; and he was compelled to make more than one fresh appeal to the bounty of the Company, which was never withheld. Shortly before his acquittal he had been able to satisfy the dream of his childhood, by buying back the ancestral manor of Daylesford, where the remainder of his life was passed in honourable retirement. In 1813 he was called on to give evidence upon Indian affairs before the two houses of parliament, which received him with exceptional marks of respect. The university of Oxford conferred on him the honorary degree of D.C.L.; and in the following year he was sworn of the privy council, and took a prominent part in the reception given to the duke of Wellington and the allied sovereigns. He died on the 22nd of August 1818, in his 86th year, and lies buried behind the chancel of the parish church, which he had recently restored at his own charges.

In physical appearance, Hastings "looked like a great man, and not like a bad man." The body was wholly subjugated to the mind. A frame naturally slight had been further attenuated by rigorous habits of temperance, and thus rendered proof against the diseases of the tropics. Against his private character not even calumny has breathed a reproach. As brother, as husband and as friend, his affections were as steadfast as they were warm. By the public he was always regarded as reserved, but within his own inner circle he gave and received perfect confidence. In his dealings with money, he was characterized rather by liberality of expenditure than by carefulness of acquisition. A classical education and the instincts of family pride saved him from both the greed and the vulgar display which marked the typical "nabob," the self-made man of those days. He could support the position of a governor-general and of a country gentleman with equal credit. Concerning his second marriage, it suffices to say that the Baroness Imhoff was nearly forty years of age, with a family of grown-up children, when the complaisant law of her native land allowed her to become Mrs Hastings. She survived her husband, who cherished towards her to the last the sentiments of a lover. Her children he adopted as his own; and it was chiefly for her sake that he desired the peerage which was twice held out to him.

Hastings's public career will probably never cease to be a subject of controversy. It was his misfortune to be the scapegoat upon whose head parliament laid the accumulated sins, real and imaginary, of the East India Company. If the acquisition of the Indian empire can be supported on ethical grounds, Hastings needs no defence. No one who reads his private correspondence will admit that even his least defensible acts were dictated by dishonourable motives. It is more pleasing to point out certain of his public measures upon which no difference of opinion can arise. He was the first to attempt to open a trade route with Tibet, and to organize a survey of Bengal and of the eastern seas. It was he who persuaded the *pundits* of Bengal to disclose the treasures of Sanskrit to European scholars. He founded the Madrasa or college for Mahommedan education at Calcutta, primarily out of his own funds; and he projected the foundation of an Indian institute in England. The Bengal Asiatic Society was established under his auspices, though he yielded the post of president to Sir W. Jones. No Englishman ever understood the native character so well as Hastings; none ever devoted himself more heartily to the promotion of every scheme, great and small, that could advance the prosperity of India. Natives and Anglo-Indians alike venerate his name, the former as their first beneficent administrator, the latter as the most able and the most enlightened of their own class. If Clive's sword conquered the Indian empire, it was the brain of Hastings that planned the system of civil administration, and his genius that saved the empire in its darkest hour.

See G. B. Malleson, *Life of Warren Hastings* (1894); G. W. Forrest, *The Administration of Warren Hastings* (Calcutta, 1892); Sir Charles Lawson, *The Private Life of Warren Hastings* (1895); L. J. Trotter, *Warren Hastings* ("Rulers of India" series) (1890); Sir Alfred Lyall, *Warren Hastings* ("English Men of Action" series) (1889); F. M. Holmes, *Four Heroes of India* (1892); G. W. Hastings, *A Vindication of Warren Hastings* (1909). Macaulay's famous essay, though a classic, is very partial and inaccurate; and Burke's speech, on the impeachment of Warren Hastings, is magnificent rhetoric. The true historical view has been restored by Sir James Stephen's *Story of Nuncomar* (1885) and by Sir John Strachey's *Hastings and the Rohilla War* (1892), and it is enforced in some

detail in Sydney C. Grier's *Letters of Warren Hastings to his Wife* (1905), material for which existed in a mass of documents relating to Hastings, acquired by the British Museum.

(J. S. Co.)

HASTINGS, a municipal, county and parliamentary borough and watering-place of Sussex, England, one of the Cinque Ports, 62 m. S.E. by S. from London, on the South Eastern & Chatham and the London, Brighton & South Coast railways. Pop. (1901), 65,528. It is picturesquely situated at the mouth of two narrow valleys, and, being sheltered by considerable hills on the north and east, has an especially mild climate. Eastward along the coast towards Fairlight, and inland, the country is beautiful. A parade fronts the English Channel, and connects the town on the west with St Leonard's, which is included within the borough. This is mainly a residential quarter, and has four railway stations on the lines serving Hastings. Both Hastings and St Leonard's have fine piers; there is a covered parade known as the Marina, and the Alexandra Park of 75 acres was opened in 1891. There are also numerous public gardens. The sandy beach is extensive, and affords excellent bathing. On the brink of the West Cliff stand a square and a circular tower and other fragments of the castle, probably erected soon after the time of William the Conqueror; together with the ruins, opened up by excavation in 1824, of the castle chapel, a transitional Norman structure 110 ft. long, with a nave, chancel and aisles. Besides the chapel there was formerly a college, both being under the control of a dean and secular canons. The deanery was held by Thomas Becket, and one of the canonries by William of Wykeham. The principal public buildings are the old parish churches of All Saints and St Clements, the first containing in its register for 1619 the baptism of Titus Oates, whose father was rector of the parish; numerous modern churches, the town hall (1880); theatre, music hall and assembly rooms. The Brassey Institute contains a public library, museum and art school. The Albert Memorial clock-tower was erected in 1864. Educational institutions include the grammar school (1883), school of science and art (1878) and technical schools. At the west end of the town are several hospitals and convalescent homes. The prosperity of the town depends almost wholly on its reputation as a watering-place, but there is a small fishing and boat-building industry. In 1890 an act of parliament authorized the construction of a harbour, but the work, begun in 1896, was not completed. The fish-market beneath the castle cliff is picturesque. The parliamentary borough, returning one member, falls within the Rye division of the county. The county borough was created in 1888. The municipal borough is under a mayor, 10 aldermen and 30 councillors. Area, 4857 acres.

Rock shelters on Castle Hill and numerous flint instruments which have been discovered at Hastings point to an extensive neolithic population, and there are ancient earthworks and a promontory camp of unknown date. There is no evidence that Hastings was a Roman settlement, but it was a place of some note in the Anglo-Saxon period. In 795 land at Hastings (Haestingaceaster, Haestingas, Haestingaport) is included in a grant, which may possibly be a forgery, of a South Saxon chieftain to the abbey of St Denis in France; and a royal mint was established at the town by Æthelstan. The battle of Hastings in 1066 described below was the first and decisive act of the Norman Conquest. It was fought near the present Battle Abbey, about 6 m. inland. After the Conquest William I. erected the earthworks of the existing castle. By 1086 Hastings was a borough and had given its name to the rape of Sussex in which it lay. The town at that time had a harbour and a market. Whether Hastings was one of the towns afterwards known as the Cinque Ports at the time when they received their first charter from Edward the Confessor is uncertain, but in the reign of William I. it was undoubtedly among them. These combined towns, of which Hastings was the head, had special liberties and a separate jurisdiction under a warden. The only charter peculiar to Hastings was granted in 1589 by Elizabeth, and incorporated the borough under the name of "mayor, jurats and commonalty," instead of the former title of "bailiff, jurats and commonalty." Hastings returned two members to parliament probably from 1322, and certainly from 1366, until 1885, when the number was reduced to one.

Battle of Hastings.—On the 28th of September 1066, William of Normandy, bent on asserting by arms his right to the English crown, landed at Pevensey. King Harold, who had destroyed the invaders of northern England at the battle of Stamford Bridge in Yorkshire, on hearing the news hurried southward, gathering what forces he could on the way. He took up his position, athwart the road from Hastings to London, on a hill[1] some 6 m. inland from Hastings, with his back to the great forest of Anderida (the Weald) and in front of him a long glacis-like slope, at the bottom of which began the opposing slope of Telham Hill. The English army was composed almost entirely of infantry. The shire levies, for the most part destitute of body armour and with miscellaneous and even improvised weapons, were arranged on either flank of Harold's guards (*huscarles*), picked men armed principally with the Danish axe and shield.

Before this position Duke William appeared on the morning of the 14th of October. His host, composed not only of his Norman vassals but of barons, knights and adventurers from all quarters, was arranged in a centre and two wings, each corps having its archers and arblasters in the front line, the rest of the infantry in the second and the heavy armoured cavalry in the third. Neither the arrows nor the charge of the second line of foot-men, who, unlike the English, wore defensive mail, made any impression on the English standing in a serried mass behind their interlocked shields.[2]

Then the heavy cavalry came on, led by the duke and his brother Odo, and encouraged by the example of the minstrel Taillefer, who rode forward, tossing and catching his sword, into the midst of the English line before he was pulled down and killed. All along the front the cavalry came to close quarters with the defenders, but the long powerful Danish axes were as formidable as the halbert and the bill proved to be in battles of later centuries, and they lopped off the arms of the assailants and cut down their horses. The fire of the attack died out and the left wing (Bretons) fled in rout. But as the *fyrd* levies broke out of the line and pursued the Bretons down the hill in a wild, formless mob, William's cavalry swung round and destroyed them, and this suggested to the duke to repeat deliberately what the Bretons had done from fear. Another advance, followed by a feigned retreat, drew down a second large body of the English from the crest, and these in turn, once in the open, were ridden over and slaughtered by the men-at-arms. Lastly, these two disasters having weakened the defenders both materially and morally, William subjected the *huscarles*, who had stood fast when the *fyrd* broke its ranks, to a constant rain of arrows, varied from time to time by cavalry charges. These magnificent soldiers endured the trial for many hours, from noon till close on nightfall; but at last, when the Norman archers raised their bows so as to pitch the arrows

at a steep angle of descent in the midst of the *huscarles*, the strain became too great. While some rushed forward alone or in twos and threes to die in the midst of the enemy, the remainder stood fast, too closely crowded almost for the wounded to drop. At last Harold received a mortal wound, the English began to waver, and the knights forced their way in. Only a remnant of the defenders made its way back to the forest; and William, after resting for a night on the hardly-won ground, began the work of the Norman Conquest.

---

1 Freeman called this hill Senlac and introduced the fashion of describing the battle as "the battle of Senlac." Mr J. H. Round, however, proved conclusively that this name, being French (Senlecque), could not have been in use at the time of the Conquest, that the battlefield had in fact no name, pointing out that in William of Malmesbury and in Domesday Book the battle is called "of Hastings" (*Bellum Hastingense*), while only one writer, Ordericus Vitalis, describes it two hundred years after the event as *Bellum Senlacium*. See Round, *Feudal England* (London, 1895), p. 333 et seq.

2 There is still a difference of opinion as to whether the English were, or were not, defended by any other rampart than that of the customary "shield-wall." Freeman, apparently as a result of a misunderstanding of a passage in Henry of Huntingdon and the slightly ambiguous verse of Wace in the *Roman du Rou* (ll. 6991-6994 and ll. 7815-7826), affirms that Harold turned "the battle as far as possible into the likeness of a siege," by building round his troops a "palisade" of solid timber (*Norman Conquest*, iii. 444). This was proved to be a fable by J. H. Round, in the course of a general attack on Freeman's historical method, which provoked the professor's defenders to take up the cudgels on his behalf in a very long and lively controversy. The result of this was that Freeman's account was wholly discredited, though Round's view—that there was no wall of any kind save the shield-wall—is not generally accepted. Professor Oman (*Academy*, June 9, 1894), for instance, holds that there was "an *abattis* of some sort" set to hamper the advance of cavalry (see also English History, vol. ix., p. 474). Mr Round sums up the controversy, from his point of view, in his *Feudal England*, p. 340 et seq., where references to other monographs on the subject will be found.

HASTINGS, a city and the county-seat of Adams county, Nebraska, U.S.A., about 95 m. W. by S. of Lincoln. Pop. (1890) 13,584; (1900) 7188 (1253 foreign-born); (1910) 9338. Hastings is served by the Chicago, Burlington & Quincy, the Chicago & North-western, the Missouri Pacific and the St Joseph & Grand Island railways. It is the seat of Hastings College (Presbyterian, coeducational), opened in 1882, and having 286 students in 1908, and of the state asylum for the chronic insane. The city carries on a considerable jobbing business for the farming region of which it is the centre and produce market. There are a large foundry and several large brickyards here. Hastings was settled in 1872, was incorporated in 1874 and was chartered as a city in the same year.

HAT, a covering for the head worn by both sexes, and distinguished from the cap or bonnet by the possession of a brim. The word in O.E. is *hœt*, which is cognate with O. Frisian *hatt*, O.N. *hotte*, &c., meaning head-covering, hood; it is distantly related to the O.E. *hod*, hood, which is cognate with the German for "hat," *Hut*. The history of the hat as part of the apparel of both sexes, with the various changes in shape which it has undergone, is treated in the article Costume.

Hats were originally made by the process of felting, and as tradition ascribed the discovery of that very ancient operation to St Clement, he was assumed as the patron saint of the craft. At the present day the trade is divided into two distinct classes. The first and most ancient is concerned with the manufacture of felt hats, and the second has to do with the recent but now most extensive and important manufacture of silk or dress hats. In addition to these there is the important manufacture of straw or plaited hats (see Straw and Straw Manufactures); and hats are occasionally manufactured of materials and by processes not included under any of these heads, but such manufactures do not take a large or permanent position in the industry.

Felt Hats.—There is a great range in the quality of felt hats: the finer and more expensive qualities are made entirely of fur; for commoner qualities a mixture of fur and wool is used; and for the cheapest kinds wool alone is employed. The processes and apparatus necessary for making hats of fur differ also from those required in the case of woollen bodies; and in large manufactories machinery is now generally employed for operations which at no distant date were entirely manual. An outline of the operations by which the old beaver hat was made will give an idea of the manual processes in making a fur napped hat, and the apparatus and mechanical processes employed in making ordinary hard and soft felts will afterwards be noticed.

Hatters' fur consists principally of the hair of rabbits (technically called coneys) and hares, with some proportion of nutria, musquash and beavers' hair; and generally any parings and cuttings from furriers are also used. Furs intended for felting are deprived of their long coarse hairs, after which they are treated with a solution of nitrate of mercury, an operation called carroting or *secretage*, whereby the felting properties of the fur are greatly increased. The fur is then cut by hand or machine from the skin, and in this state it is delivered to the hat maker.

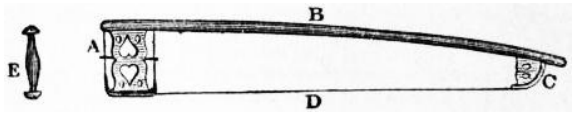


Fig. 1.

The old process of making a beaver hat was as follows. The materials of a proper beaver consisted, for the body or foundation, of rabbits' fur, and for the nap, of beaver fur, although the beaver was often mixed with or supplanted by a more common fur. In preparing the fur plate, the hatter weighed out a sufficient quantity of rabbit fur for a single hat, and spread it out and combined it by the operation of bowing. The bow or stang ABC (fig. 1) was about 7 ft. long, and it stretched a single cord of catgut D, which the workman vibrated by means of a

wooden pin E, furnished with a half knob at each end. Holding the bow in his left hand, and the pin in his right, he caused the vibrating string to come in contact with the heap of tangled fur, which did not cover a space greater than that of the hand. At each vibration some of the filaments started up to the height of a few inches, and fell away from the mass, a little to the right of the bow, their excursions being restrained by a concave frame of wicker work called the basket. One half of the material was first operated on, and by bowing and gathering, or a patting use of the basket, the stuff was loosely matted into a triangular figure, about 50 by 36 in., called a bat. In this formation care was taken to work about two-thirds of the fur down towards what was intended for the brim, and this having been effected, greater density was induced by gentle pressure with the basket. It was then covered with a wettish linen cloth, upon which was laid the hardening skin, a piece of dry half-tanned horse hide. On this the workman pressed until the stuff adhered closely to the damp cloth, in which it was then doubled up, freely pressed with the hand, and laid aside. By this process, called basoning, the bat became compactly felted and thinned toward the sides and point. The other half of the fur was next subjected to precisely the same processes, after which a cone-shaped slip of stiff paper was laid on its surface, and the sides of the bat were folded over its edges to its form and size. It was then laid paper-side downward upon the first bat, which was now replaced on the hurdle, and its edges were transversely doubled over the introverted side-lays of the second bat, thus giving equal thickness to the whole body. In this condition it was reintroduced between folds of damp linen cloth, and again hardened, so as to unite the two halves, the knitting together of which was quickly effected. The paper was then withdrawn, and the body in the form of a large cone removed to the plank or battery room.

The battery consisted of an open iron boiler or kettle A (fig. 2), filled with scalding hot water, with shelves, B, C, partly of mahogany and partly of lead, sloping down to it. Here the body was first dipped in the water, and then withdrawn to the plank to cool and drain, when it was unfolded, rolled gently with a pin tapering towards the ends, turned, and worked in every direction, to toughen and shrink it, and at the same time prevent adhesion of its sides. Stopping or thickening any thin spots seen on looking through the body, was carefully performed by dabbing on additional stuff in successive supplies from the hot liquor with a brush frequently dipped into the kettle, until the body was shrunk sufficiently (about one-half) and thoroughly equalized. When quite dried, stiffening was effected with a brush dipped into a thin varnish of shellac, and rubbed into the body, the surface intended for the inside having much more laid on it than the outer, while the brim was made to absorb many times the quantity applied to any other part.

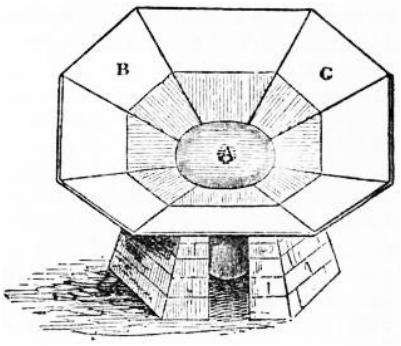


Fig. 2.

On being again dried, the body was ready to be covered with a nap of beaver hair. For this, in inferior qualities, the hair of the otter, nutria or other fine fur was sometimes substituted. The requisite quantity of one or other of these was taken and mixed with a proportion of cotton, and the whole was bowed up into a thin uniform lap. The cotton merely served to give sufficient body to the material to enable the workman to handle the lap. The body of the hat being damped, the workman spread over it a covering of this lap, and by moistening and gentle patting with a brush the cut ends of the hair penetrated and fixed themselves in the felt body. The hat was then put into a coarse hair cloth, dipped and rolled in the hot liquor until the fur was quite worked in, the cotton being left on the surface loose and ready for removal. The blocking, dyeing and finishing processes in the case of beaver hats were similar to those employed for ordinary felts, except that greater care and dexterity were required on the part of the workmen, and further that the coarse hairs or kemps which might be in the fur were cut off by shaving the surface with a razor. The nap also had to be laid in one direction, smoothed and rendered glossy by repeated wettings, ironings and brushings. A hat so finished was very durable and much more light, cool and easy-fitting to the head than the silk hat which has now so largely superseded it.

The first efficient machinery for making felt hats was devised in America, and from the United States the machine-making processes were introduced into England about the year 1858; and now in all large establishments machinery such as that alluded to below is employed. For the forming of hat bodies two kinds of machine are used, according as the material employed is fur or wool. In the case of fur, the essential portion of the apparatus is a “former,” consisting of a metal cone of the size and form of the body or bat to be made, perforated all over with small holes. The cone is made to revolve on its axis slowly over an orifice under which there is a powerful fan, which maintains a strong inward draught of air through the holes in the cone. At the side of the cone, and with an opening towards it, is a trunk or box from which the fur to be made into a hat is thrown out by the rapid revolution of a brushlike cylinder, and as the cloud of separate hairs is expelled from the trunk, the current of air being sucked through the cone carries the fibres to it and causes them to cling closely to its surface. Thus a coating of loose fibres is accumulated on the copper cone, and these are kept in position only by the exhaust at work under it. When sufficient for a hat body has been deposited, it is damped and a cloth is wrapped round it; then an outer cone is slipped over it and the whole is removed for felting, while another copper cone is placed in position for continuing the work. The fur is next felted by being rolled and pressed, these operations being performed partly by hand and partly by machine.

In the case of wool hats the hat or body is prepared by first carding in a modified form of carding machine. The wool is divided into two separate slivers as delivered from the cards, and these are wound simultaneously on a double conical block of wood mounted and geared to revolve slowly with a reciprocating horizontal motion, so that there is a continual crossing and recrossing of the wool as the sliver is wound around the cone. This diagonal arrangement of the sliver is an essential feature in the apparatus, as thereby the strength of the finished felt is made equal in every direction; and when strained in the blocking the texture yields in a uniform manner without rupture. The wool wound on the double block forms the material of two hats, which are separated by cutting around the median or base line, and slipping each half off at its own end. Into each cone of wool or bat an “inlayer” is now placed to prevent the inside from matting, after which they are folded in cloths, and placed over a perforated iron plate through which steam is blown. When well moistened and heated, they are placed between boards, and subjected to a rubbing action sufficient to harden them for bearing the subsequent strong planking or felting operations. The planking of wool hats is generally done by machine, in some cases a form of fulling mill being used; but in all forms the agencies are heat, moisture, pressure, rubbing and turning.

When by thorough felting the hat bodies of any kind have been reduced to dense leathery cones about one-half the size of the original bat, they are dried, and, if hard felts are to be made, the bodies are at this stage hardened or stiffened with a varnish of shellac. Next follows the operations of blocking, in which the felt for the first time assumes approximately the form it is ultimately to possess. For this purpose the conical body is softened in boiling

water, and forcibly drawn over and over a hat-shaped wooden block. The operation of dyeing next follows, and the finishing processes include shaping on a block, over which crown and brim receive ultimately their accurate form, and pouncing or pumicing, which consists of smoothing the surface with fine emery paper, the hat being for this purpose mounted on a rapidly revolving block. The trimmer finally binds the outer brim and inserts the lining, after which the brim may be given more or less of a curl or turn over according to prevailing fashion.

Silk Hats.—The silk hat, which has now become co-extensive with civilization, is an article of comparatively recent introduction. It was invented in Florence about 1760, but it was more than half a century before it was worn to any great extent.

A silk hat consists of a light stiff body covered with a plush of silk, the manufacture of which in a brilliant glossy condition is the most important element in the industry. Originally the bodies were made of felt and various other materials, but now calico is chiefly used. The calico is first stiffened with a varnish of shellac, and then cut into pieces sufficient for crown, side and brim. The side-piece is wound round a wooden hat block, and its edges are joined by hot ironing, and the crown-piece is put on and similarly attached to the side. The brim, consisting of three thicknesses of calico cemented together, is now slipped over and brought to its position, and thereafter a second side-piece and another crown are cemented on. The whole of the body, thus prepared, now receives a coat of size, and subsequently it is varnished over, and thus it is ready for the operation of covering. In covering this body, the under brim, generally of merino, is first attached, then the upper brim, and lastly the crown and side sewn together are drawn over. All these by hot ironing and stretching are drawn smooth and tight, and as the varnish of the body softens with the heat, body and cover adhere all over to each other without wrinkle or pucker. Dressing and polishing by means of damping, brushing and ironing, come next, after which the hat is "velured" in a revolving machine by the application of haircloth and velvet velures, which cleans the nap and gives it a smooth and glossy surface. The brim has only then to be bound, the linings inserted, and the brim finally curled, when the hat is ready for use.

HATCH, EDWIN (1835-1889), English theologian, was born at Derby on the 14th of September 1835, and was educated at King Edward's school, Birmingham, under James Prince Lee, afterwards bishop of Manchester. He had many struggles to pass through in early life, which tended to discipline his character and to form the habits of severe study and the mental independence for which he came to be distinguished. Hatch became scholar of Pembroke College, Oxford, took a second-class in classics in 1857, and won the Ellerton prize in 1858. He was professor of classics in Trinity College, Toronto, from 1859 to 1862, when he became rector of the high school at Quebec. In 1867 he returned to Oxford, and was made vice-principal of St Mary Hall, a post which he held until 1885. In 1883 he was presented to the living of Purleigh in Essex, and in 1884 was appointed university reader in ecclesiastical history. In 1880 he was Bampton lecturer, and from 1880 to 1884 Grinfield lecturer on the Septuagint. In 1883 the university of Edinburgh conferred on him the D.D. degree. He was the first editor of the university official *Gazette* (1870), and of the *Student's Handbook to the University*. A reputation acquired through certain contributions to the *Dictionary of Christian Antiquities* was confirmed by his treatises *On the Organization of the Early Christian Churches* (1881, his Bampton lectures), and on *The Influence of Greek Ideas and Usages on the Christian Church* (the Hibbert lectures for 1888). These works provoked no little criticism on account of the challenge they threw down to the high-church party, but the research and fairness displayed were admitted on all hands. The Bampton lectures were translated into German by Harnack. Among his other works are *The Growth of Church Institutions* (1887); *Essays in Biblical Greek* (1889); *A Concordance to the Septuagint* (in collaboration with H. A. Redpath); *Towards Fields of Light* (verse, 1889); *The God of Hope* (sermons with memoir, 1890). Hatch died on the 10th of November 1889.

An appreciation by W. Sanday appeared in *The Expositor* for February 1890.

HATCH. 1. (In Mid. Eng. *hacche*; the word is of obscure origin, but cognate forms appear in Swed. *häcka*, and Dan. *hackke*; it has been connected with "hatch," grating, with possible reference to a coop, and with "hack" in the sense "to peck," of chickens coming out of the shell), to bring out young from the egg, by incubation or other process, natural or artificial. The word is also used as a substantive of a brood of chickens brought out from the eggs. "Hatchery" is particularly applied to a place for the hatching of fish spawn, where the natural process is aided by artificial means. In a figurative sense "to hatch" is often used of the development or contrivance of a plot or conspiracy.

2. (From the Fr. *hacher*, to cut, *hache*, hatchet), to engrave or draw by means of cutting lines on wood, metal, &c., or to ornament by inlaying with strips of some other substance as gold or silver. Engraved lines, especially those used in shading, are called "hatches" or "hachures" (see HACHURE).

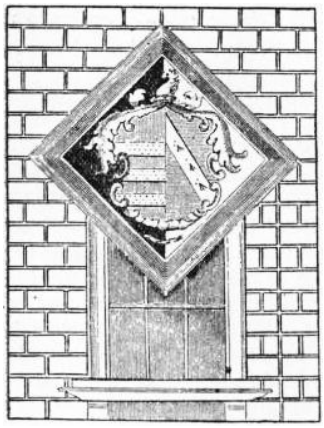
3. (O.E. *hæc*, a gate, rack in a stable; found in various Teutonic languages; cf. Dutch *hek*, Dan. *hekke*; the ultimate origin is obscure; Skeat suggests a connexion with the root seen in "hook"), the name given to the lower half of a divided door, as in "buttery-hatch," the half-door leading from the buttery or kitchen, through which the dishes could be passed into the dining-hall. It was used formerly as another name for a ship's deck, and thus the phrase "under hatches" meant properly below deck; the word is now applied to the doors of grated framework covering the openings (the "hatchways") which lead from one deck to another into the hold through which the cargo is lowered. In Cornwall the word is used to denote certain dams or mounds used to prevent the tin-washes and the water coming from the stream-works from flowing into the fresh rivers.

HATCHET (adapted from the Fr. *hachette*, diminutive of *hache*, axe, *hacher*, to cut, hack), a small, light form of axe with a short handle (see Tool); for the war-hatchet of the North American Indians and the symbolical ceremonies connected with it see Tomahawk.

HATCHETTITE, sometimes termed *Mountain Tallow*, *Mineral Adipocire*, or *Adipocerite*, a mineral hydrocarbon occurring in the Coal-measures of Belgium and elsewhere, occupying in some cases the interior of hollow concretions of iron-ore, but more generally the cavities of fossil shells or crevices in the rocks. It is of yellow colour, and translucent, but darkens and becomes opaque on exposure. It has no odour, is greasy to the touch, and has a slightly glistening lustre. Its hardness is that of soft wax. The melting point is 46° to 47° C., and the composition is C. 85.55, H. 14.45.

HATCHMENT, properly, in heraldry, an escutcheon or armorial shield granted for some act of distinction or "achievement," of which word it is a corruption through such forms as *atcheament*, *achement*, *hachement*, &c. "Achievement" is an adaptation of the Fr. *achèvement*, from *achever*, *à chef venir*, Lat. *ad caput venire*, to come to a head, or conclusion, hence accomplish, achieve. The term "hatchment" is now usually applied to funeral escutcheons or armorial shields enclosed in a black lozenge-shaped frame suspended against the wall of a deceased person's house. It is usually placed over the entrance at the level of the second floor, and remains for from six to twelve months, when it is removed to the parish church. This custom is falling into disuse, though still not uncommon. It is usual to hang the hatchment of a deceased head of a house at the universities of Oxford and Cambridge over the entrance to his lodge or residence.

If for a bachelor the hatchment bears upon a shield his arms, crest, and other appendages, the whole on a black ground. If for a single woman, her arms are represented upon a lozenge, bordered with knotted ribbons, also on a black ground. If the hatchment be for a married man (as in the illustration), his arms upon a shield impale those of his surviving wife; or if she be an heiress they are placed upon a scutcheon of pretence, and crest and other appendages are added. The dexter half of the ground is black, the sinister white. For a wife whose husband is alive the same arrangement is used, but the sinister ground only is black. For a widower the same is used as for a married man, but the whole ground is black; for a widow the husband's arms are given with her own, but upon a lozenge, with ribbons, without crest or appendages, and the whole ground is black. When there have been two wives or two husbands the ground is divided into three parts per pale, and the division behind the arms of the survivor is white. Colours and military or naval emblems are sometimes placed behind the arms of military or naval officers. It is thus easy to discern from the hatchment the sex, condition and quality, and possibly the name of the deceased.



In Scottish hatchments it is not unusual to place the arms of the father and mother of the deceased in the two lateral angles of the lozenge, and sometimes the 4, 8 or 16 genealogical escutcheons are ranged along the margin.

HATFIELD, a town in the Mid or St Albans parliamentary division of Hertfordshire, England, 17½ m. N. of London by the Great Northern railway. Pop. (1901), 4754. It lies picturesquely on the flank of a wooded hill, and about its foot, past which runs the Great North Road. The church of St Etheldreda, well situated towards the top of the hill, contains an Early English round arch with the dog-tooth moulding, but for the rest is Decorated and Perpendicular, and largely restored. The chapel north of the chancel is known as the Salisbury chapel, and was erected by Robert Cecil, first earl of Salisbury (d. 1612), who was buried here. It is in a mixture of classic and Gothic styles. In a private portion of the churchyard is buried, among others of the family, the third marquess of Salisbury (d. 1903). In the vicinity is Hatfield House, close to the site of a palace of the bishops of Ely, which was erected about the beginning of the 12th century. From this palace comes the proper form of the name of the town, Bishop's Hatfield. In 1538 the manor was resigned to Henry VIII. by Bishop Thomas Goodrich of Ely, in exchange for certain lands in Cambridge, Essex and Norfolk; and after that monarch the palace was successively the residence of Edward VI. immediately before his accession, of Queen Elizabeth during the reign of her sister Mary, and of James I. The last-named exchanged it in 1607 for Theobalds, near Cheshunt, in the same county, an estate of Robert Cecil, earl of Salisbury, in whose family Hatfield House has since remained. The west wing of the present mansion, built for Cecil in 1608-1611, was destroyed by fire in November 1835, the dowager marchioness of Salisbury, widow of the 1st marquess, perishing in the flames. Hatfield House was built, and has been restored and maintained, in the richest style of its period, both without and within. The buildings of mellowed red brick now used as stables and offices are, however, of a period far anterior to Cecil's time, and are probably part of the erection of John Morton, bishop of Ely in 1478-1486. The park measures some 10 m. in circumference. From the eminence on which the mansion stands the ground falls towards the river Lea, which here expands into a small lake. Beyond this is a rare example of a monks' walled vineyard. In the park is also an ancient oak under which Elizabeth is said to have been seated when the news of her sister's death was brought to her. Brocket Park is

another fine demesne, at the neighbouring village of Lemsford, and the Brocket chapel in Hatfield church contains memorials of the families who have held this seat.

HATHERLEY, WILLIAM PAGE WOOD, 1ST BARON (1801-1881), lord chancellor of Great Britain, son of Sir Matthew Wood, a London alderman and lord mayor who became famous for befriending Queen Caroline and braving George IV., was born in London on the 29th of November 1801. He was educated at Winchester, Geneva University, and Trinity College, Cambridge, where he became a fellow after being 24th wrangler in 1824. He entered Lincoln's Inn, and was called to the bar in 1824, studying conveyancing in Mr John Tyrrell's chambers. He soon obtained a good practice as an equity draughtsman and before parliamentary committees, and in 1830 married Miss Charlotte Moor. In 1845 he became Q.C., and in 1847 was elected to parliament for the city of Oxford as a Liberal. In 1849 he was appointed vice-chancellor of the county palatine of Lancaster, and in 1851 was made solicitor-general and knighted, vacating that position in 1852. When his party returned to power in 1853, he was raised to the bench as a vice-chancellor. In 1868 he was made a lord justice of appeal, but before the end of the year was selected by Mr Gladstone to be lord chancellor, and was raised to the peerage as Lord Hatherley of Down Hatherley. He retired in 1872 owing to failing eyesight, but sat occasionally as a law lord. His wife's death in 1878 was a great blow, from which he never recovered, and he died in London on the 10th of July 1881. Dean Hook said that Lord Hatherley—who was a sound and benevolent supporter of the Church of England —was the best man he had ever known. He was a particularly clear-headed lawyer, and his judgments—always delivered extempore—commanded the greatest confidence both with the public and the legal profession. He left no issue and the title became extinct on his death.

HATHERTON, EDWARD JOHN LITTLETON, 1ST BARON (1791-1863), was born on the 18th of March 1791 and was educated at Rugby school and at Brasenose College, Oxford. He was the only son of Moreton Walhouse of Hatherton, Staffordshire; but in 1812, in accordance with the will of his great-uncle Sir Edward Littleton, Bart. (d. 1812), he took the name of Littleton. From 1812 to 1832 he was member of parliament for Staffordshire and from 1832 to 1835 for the southern division of that county, being specially prominent in the House of Commons as an advocate of Roman Catholic emancipation. In January 1833, against his own wish, he was put forward by the Radicals as a candidate for the office of speaker, but he was not elected and in May 1833 he became chief secretary to the lord-lieutenant of Ireland in the ministry of Earl Grey. His duties in this capacity brought him frequently into conflict with O'Connell, but he was obviously unequal to the great Irishman, although he told his colleagues to "leave me to manage Dan." He had to deal with the vexed and difficult question of the Irish tithes on which the government was divided, and with his colleagues had to face the problem of a new coercion act. Rather hastily he made a compact with O'Connell on the assumption that the new act could not contain certain clauses which were part of the old act. The clauses, however, were inserted; O'Connell charged Littleton with deception; and in July 1834 Grey, Althorp (afterwards Earl Spencer) and the Irish secretary resigned. The two latter were induced to serve under the new premier, Lord Melbourne, and they remained in office until Melbourne was dismissed in November 1834. In 1835 Littleton was created Baron Hatherton, and he died at his Staffordshire residence, Teddesley Hall, on the 4th of May 1863. In 1888 his grandson, Edward George Littleton (b. 1842), became 3rd Baron Hatherton.

See Hatherton's *Memoirs and Correspondence relating to Political Occurrences, June-July 1834*, edited by H. Reeve (1872); and Sir S. Walpole, *History of England*, vol. iii. (1890).

HATHRAS, a town of British India, in the Aligarh district of the United Provinces, 29 m. N. of Agra. Pop. (1901), 42,578. At the end of the 18th century it was held by a Jat chieftain, whose ruined fort still stands at the east end of the town, and was annexed by the British in 1803, but insubordination on the part of the chief necessitated the siege of the fort in 1817. Since it came under British rule, Hathras has rapidly risen to commercial importance, and now ranks second to Cawnpore among the trading centres of the Doab. The chief articles of commerce are sugar and grain, there are also factories for ginning and pressing cotton, and a cotton spinning-mill. Hathras is connected by a light railway with Muttra, and by a branch with Hathras junction, on the East Indian main line.

HATTIESBURG, a city and the county-seat of Forrest county, Mississippi, U.S.A., on the Hastahatchee (or Leaf) river, about 90 m. S.E. of Jackson. Pop. (1890) 1172; (1900) 4175 (1687 negroes); (1910) 11,733. Hattiesburg is served by the Gulf & Ship Island, the Mississippi Central, the New Orleans, Mobile & Chicago and the New Orleans & North Eastern railways. The officers and employees of the Gulf & Ship Island railway own and maintain a hospital here. The city is in a rich farming, truck-gardening and lumbering country. Among its manufactures are lumber (especially yellow-pine), wood-alcohol, turpentine, paper and pulp, fertilizers, wagons, mattresses and machine-shop products. Hattiesburg was founded about 1882 and was named in honour of the

wife of W. H. Hardy, a railway official, who planned a town at the intersection of the New Orleans & North-Eastern (which built a round house and repair shops here in 1885) and the Gulf & Ship Island railways. The latter railway was opened from Gulfport to Hattiesburg in January 1897, and from Hattiesburg to Jackson in September 1900. Hattiesburg was incorporated as a town in 1884 and was chartered as a city in 1899. Formerly the “court house” of the second judicial district of Perry county, Hattiesburg became on the 1st of January 1908 the county-seat of Forrest county, erected from the W. part of Perry county.

HATTINGEN, a town of Germany, in the Prussian province of Westphalia, on the river Ruhr, 21 m. N.E. of Düsseldorf. Pop. (1900), 8975. It has two Evangelical and a Roman Catholic church. The manufactures include tobacco, and iron and steel goods. In the neighbourhood are the ruins of the Isenburg, demolished in 1226. Hattingen, which received communal rights in 1396, was one of the Hanse towns.

HATTO I. (*c.* 850-913), archbishop of Mainz, belonged to a Swabian family, and was probably educated at the monastery of Reichenau, of which he became abbot in 888. He soon became known to the German king, Arnulf, who appointed him archbishop of Mainz in 891; and he became such a trustworthy and confidential counsellor that he was popularly called “the heart of the king.” He presided over the important synod at Tribur in 895, and accompanied the king to Italy in 894 and 895, where he was received with great favour by Pope Formosus. In 899, when Arnulf died, Hatto became regent of Germany, and guardian of the young king, Louis the Child, whose authority he compelled Zwentibold, king of Lorraine, an illegitimate son of Arnulf, to recognize. During these years he did not neglect his own interests, for in 896 he secured for himself the abbey of Ellwangen and in 898 that of Lorsch. He assisted the Franconian family of the Conradines in its feud with the Babenbergs, and was accused of betraying Adalbert, count of Babenberg, to death. He retained his influence during the whole of the reign of Louis; and on the king’s death in 911 was prominent in securing the election of Conrad, duke of Franconia, to the vacant throne. When trouble arose between Conrad and Henry, duke of Saxony, afterwards King Henry the Fowler, the attitude of Conrad was ascribed by the Saxons to the influence of Hatto, who wished to prevent Henry from securing authority in Thuringia, where the see of Mainz had extensive possessions. He was accused of complicity in a plot to murder Duke Henry, who in return ravaged the archiepiscopal lands in Saxony and Thuringia. He died on the 15th of May 913, one tradition saying he was struck by lightning, and another that he was thrown alive by the devil into the crater of Mount Etna. His memory was long regarded in Saxony with great abhorrence, and stories of cruelty and treachery gathered round his name. The legend of the Mouse Tower at Bingen is connected with Hatto II., who was archbishop of Mainz from 968 to 970. This Hatto built the church of St George on the island of Reichenau, was generous to the see of Mainz and to the abbeys of Fulda and Reichenau, and was a patron of the chronicler Regino, abbot of Prüm.

See E. Dümmler, *Geschichte des ostfränkischen Reichs* (Leipzig, 1887-1888); G. Phillips, *Die grosse Synode von Tribur* (Vienna, 1865); J. Heidemann, *Hatto I., Erzbischof von Mainz* (Berlin, 1865); G. Waitz, *Jahrbücher der deutschen Geschichte unter Heinrich I.* (Berlin and Leipzig, 1863); and J. F. Böhmer, *Regesta archiepiscoporum Maguntinensium*, edited by C. Will (Innsbruck, 1877-1886).

HATTON, SIR CHRISTOPHER (1540-1591), lord chancellor of England and favourite of Queen Elizabeth, was a son of William Hatton (d. 1546) of Holdenby, Northamptonshire, and was educated at St Mary Hall, Oxford. A handsome and accomplished man, being especially distinguished for bis elegant dancing, he soon attracted the notice of Queen Elizabeth, became one of her gentlemen pensioners in 1564, and captain of her bodyguard in 1572. He received numerous estates and many positions of trust and profit from the queen, and suspicion was not slow to assert that he was Elizabeth’s lover, a charge which was definitely made by Mary queen of Scots in 1584. Hatton, who was probably innocent in this matter, had been made vice-chamberlain of the royal household and a member of the privy council in 1578, and had been a member of parliament since 1571, first representing the borough of Higham Ferrers and afterwards the county of Northampton. In 1578 he was knighted, and was now regarded as the queen’s spokesman in the House of Commons, being an active agent in the prosecutions of John Stubbs and William Parry. He was one of those who were appointed to arrange a marriage between Elizabeth and Francis, duke of Alençon, in 1581; was a member of the court which tried Anthony Babington in 1586; and was one of the commissioners who found Mary queen of Scots guilty. He besought Elizabeth not to marry the French prince; and according to one account repeatedly assured Mary that he would fetch her to London if the English queen died. Whether or no this story be true, Hatton’s loyalty was not questioned; and he was the foremost figure in that striking scene in the House of Commons in December 1584, when four hundred kneeling members repeated after him a prayer for Elizabeth’s safety. Having been the constant recipient of substantial marks of the queen’s favour, he vigorously denounced Mary Stuart in parliament, and advised William Davison to forward the warrant for her execution to Fotheringay. In the same year (1587) Hatton was made lord chancellor, and although he had no great knowledge of the law, he appears to have acted with sound sense and good judgment in his new position. He is said to have been a Roman Catholic in all but name, yet he treated religious questions in a moderate and tolerant way. He died in London on the 20th of November 1591, and was buried in St Paul’s cathedral. Although mention has been made of a secret marriage, Hatton appears to have remained single, and his large and valuable estates descended to his nephew, Sir William Newport, who took the name of Hatton. Sir Christopher was a knight of the Garter and chancellor of the university of Oxford. Elizabeth frequently showed her affection for her favourite in an extravagant and ostentatious manner. She called him her *mouton*, and forced

the bishop of Ely to give him the freehold of Ely Place, Holborn, which became his residence, his name being perpetuated in the neighbouring Hatton Garden. Hatton is reported to have been a very mean man, but he patronized men of letters, and among his friends was Edmund Spenser. He wrote the fourth act of a tragedy, *Tancred and Gismund*, and his death occasioned several panegyrics in both prose and verse.

When Hatton's nephew, Sir William Hatton, died without sons in 1597, his estates passed to a kinsman, another Sir Christopher Hatton (d. 1619), whose son and successor, Christopher (*c.* 1605-1670), was elected a member of the Long Parliament in 1640, and during the Civil War was a partisan of Charles I. In 1643 he was created Baron Hatton of Kirby; and, acting as comptroller of the royal household, he represented the king during the negotiations at Uxbridge in 1645. Later he lived for some years in France, and after the Restoration was made a privy councillor and governor of Guernsey. He died at Kirby on the 4th of July 1670, and was buried in Westminster Abbey. By his wife Elizabeth (d. 1672), daughter of Sir Charles Montagu of Boughton, he had two sons and three daughters. His eldest son Christopher (1632-1706), succeeded his father as Baron Hatton and also as governor of Guernsey in 1670. In 1683 he was created Viscount Hatton of Grendon. He was married three times, and left two sons: William (1690-1760), who succeeded to his father's titles and estates, and Henry Charles (*c.* 1700-1762), who enjoyed the same dignities for a short time after his brother's death. When Henry Charles died, the titles became extinct, and the family is now represented by the Finch-Hattons, earls of Winchilsea and Nottingham, whose ancestor, Daniel Finch, 2nd earl of Nottingham, married Anne (d. 1743), daughter of the 1st Viscount Hatton.

See Sir N. H. Nicolas, *Life and Times of Sir Christopher Hatton* (London, 1847); and *Correspondence of the Family of Hatton, being chiefly Letters addressed to Christopher, first Viscount Hatton*, 1601-1704, edited with introduction by E. M. Thompson (London, 1878).

HATTON, JOHN LIPTROT (1809-1886), English musical composer, was born at Liverpool on the 12th of October 1809. He was virtually a self-taught musician, and besides holding several appointments as organist in Liverpool, appeared as an actor on the Liverpool stage, subsequently finding his way to London as a member of Macready's company at Drury Lane in 1832. Ten years after this he was appointed conductor at the same theatre for a series of English operas, and in 1843 his own first operetta, *Queen of the Thames*, was given with success. Staudigl, the eminent German bass, was a member of the company, and at his suggestion Hatton wrote a more ambitious work, *Pascal Bruno*, which, in a German translation, was presented at Vienna, with Staudigl in the principal part; the opera contained a song, "Revenge," which the basso made very popular in England, though the piece as a whole was not successful enough to be produced here. Hatton's excellent pianoforte playing attracted much attention in Vienna; he took the opportunity of studying counterpoint under Sechter, and wrote a number of songs, obviously modelled on the style of German classics. In 1846 he appeared at the Hereford festival as a singer, and also played a pianoforte concerto of Mozart. He undertook concert tours about this time with Sivori, Vieuxtemps and others. From 1848 to 1850 he was in America; on his return he became conductor of the Glee and Madrigal Union, and from about 1853 was engaged at the Princess's theatre to provide and conduct the music for Charles Kean's Shakespearean revivals. He seems to have kept this appointment for about five years. In 1856 a cantata, *Robin Hood*, was given at the Bradford festival, and a third opera, *Rose, or Love's Ransom*, at Covent Garden in 1864, without much success. In 1866 he went again to America, and from this year Hatton held the post of accompanist at the Ballad Concerts, St James's Hall, for nine seasons. In 1875 he went to Stuttgart, and wrote an oratorio, *Hezekiah*, given at the Crystal Palace in 1877; like all his larger works it met with very moderate success. Hatton excelled in the lyrical forms of music, and, in spite of his distinct skill in the severer styles of the madrigal, &c., he won popularity by such songs as "To Anthea," "Good-bye, Sweetheart," and "Simon the Cellarer," the first of which may be called a classic in its own way. His glees and part-songs, such as "When Evening's Twilight," are still reckoned among the best of their class; and he might have gained a place of higher distinction among English composers had it not been for his irresistible animal spirits and a want of artistic reverence, which made it uncertain in his younger days whether, when he appeared at a concert, he would play a fugue of Bach or sing a comic song. He died at Margate on the 20th of September 1886.

HAUCH, JOHANNES CARSTEN (1790-1872), Danish poet, was born of Danish parents residing at Frederikshald in Norway, on the 12th of May 1790. In 1802 he lost his mother, and in 1803 returned with his father to Denmark. In 1807 he fought as a volunteer against the English invasion. He entered the university of Copenhagen in 1808, and in 1821 took his doctor's degree. He became the friend and associate of Steffens and Oehlenschläger, warmly adopting the romantic views about poetry and philosophy. His first two dramatic poems, *The Journey to Ginistan* and *The Power of Fancy*, appeared in 1816, and were followed by a lyrical drama, *Rosaura* (1817); but these works attracted little or no attention. Hauch therefore gave up all hope of fame as a poet, and resigned himself entirely to the study of science. He took his doctor's degree in zoology in 1821, and went abroad to pursue his studies. At Nice he had an accident which obliged him to submit to the amputation of one foot. He returned to literature, publishing a dramatized fairy tale, the *Hamadryad*, and the tragedies of *Bajazet*, *Tiberius*, *Gregory VII.*, in 1828-1829, *The Death of Charles V.* (1831), and *The Siege of Maestricht* (1832). These plays were violently attacked and enjoyed no success. Hauch then turned to novel-writing, and published in succession five romances—*Vilhelm Zabern* (1834); *The Alchemist* (1836); *A Polish Family* (1839); *The Castle on the Rhine* (1845); and *Robert Fulton* (1853). In 1842 he collected his shorter *Poems*. In 1846 he was appointed professor of the Scandinavian languages in Kiel, but returned to Copenhagen when the war broke out in 1848. About this time his dramatic talent was at its height, and he produced one admirable tragedy after another; among these may be mentioned *Svend Grathe* (1841); *The Sisters at Kinnekulle* (1849); *Marshal Stig* (1850); *Honour Lost and Won* (1851); and *Tycho Brahe's Youth* (1852). From 1858 to 1860 Hauch was director of the Danish National Theatre; he produced three more tragedies—*The King's Favourite* (1859); *Henry of Navarre*

(1863); and *Julian the Apostate* (1866). In 1861 he published another collection of *Lyrical Poems and Romances*; and in 1862 the historical epic of *Valdemar Seir*, volumes which contain his best work. From 1851, when he succeeded Oehlenschläger, to his death, he held the honorary post of professor of aesthetics at the university of Copenhagen. He died in Rome in 1872. Hauch was one of the most prolific of the Danish poets, though his writings are unequal in value. His lyrics and romances in verse are always fine in form and often strongly imaginative. In all his writings, but especially in his tragedies, he displays a strong bias in favour of what is mystical and supernatural. Of his dramas *Marshal Stig* is perhaps the best, and of his novels the patriotic tale of *Vilhelm Zabern* is admired the most.

See G. Brandes, "Carsten Hauch" (1873) in *Danske Digtere* (1877); F. Rönning, *J. C. Hauch* (1890), and in *Dansk Biografisk-Lexicon*, (vol. vii. Copenhagen, 1893). Hauch's novels were collected (1873-1874) and his dramatic works (3 vols., 2nd ed., 1852-1859).

HAUER, FRANZ, Ritter von (1822-1899), Austrian geologist, born in Vienna on the 30th of January 1822, was son of Joseph von Hauer (1778-1863), who was equally distinguished as a high Austrian official and authority on finance and as a palaeontologist. He was educated in Vienna, afterwards studied geology at the mining academy of Schemnitz (1839-1843), and for a time was engaged in official mining work in Styria. In 1846 he became assistant to W. von Haidinger at the mineralogical museum in Vienna; three years later he joined the imperial geological institute, and in 1866 he was appointed director. In 1886 he became superintendent of the imperial natural history museum in Vienna. Among his special geological works are those on the Cephalopoda of the Triassic and Jurassic formations of Alpine regions (1855-1856). His most important general work was that of the *Geological Map of Austro-Hungary*, in twelve sheets (1867-1871; 4th ed., 1884, including Bosnia and Montenegro). This map was accompanied by a series of explanatory pamphlets. In 1882 he was awarded the Wollaston medal by the Geological Society of London. In 1892 von Hauer became a life-member of the upper house of the Austrian parliament. He died on the 20th of March 1899.

Publications.—*Beiträge zur Paläontolographie von Österreich* (1858-1859); *Die Geologie und ihre Anwendung auf die Kenntnis der Bodenbeschaffenheit der österr.-ungar. Monarchie* (1875; ed. 2, 1878).

Memoir by Dr E. Tietze; *Jahrbuch der K. K. geolog. Reichsanstalt* (1899, reprinted 1900, with portrait).

HAUFF, WILHELM (1802-1827), German poet and novelist, was born at Stuttgart on the 29th of November 1802, the son of a secretary in the ministry of foreign affairs. Young Hauff lost his father when he was but seven years of age, and his early education was practically self-gained in the library of his maternal grandfather at Tübingen, to which place his mother had removed. In 1818 he was sent to the Klosterschule at Blaubeuren, whence he passed in 1820 to the university of Tübingen. In four years he completed his philosophical and theological studies, and on leaving the university became tutor to the children of the famous Württemberg minister of war, General Baron Ernst Eugen von Hügel (1774-1849), and for them wrote his *Märchen*, which he published in his *Märchenalmanach auf das Jahr* 1826. He also wrote there the first part of the *Mitteilungen aus den Memoiren des Satan* (1826) and *Der Mann im Monde* (1825). The latter, a parody of the sentimental and sensual novels of H. Clauren (pseudonym of Karl Gottlieb Samuel Heun [1771-1854]), became, in course of composition, a close imitation of that author's style and was actually published under his name. Clauren, in consequence, brought an action for damages against Hauff and gained his case. Whereupon Hauff followed up the attack in his witty and sarcastic *Kontroverspredigt über H. Clauren und den Mann im Monde* (1826) and attained his original object—the moral annihilation of the mawkish and unhealthy literature with which Clauren was flooding the country. Meanwhile, animated by Sir Walter Scott's novels, Hauff wrote the historical romance *Lichtenstein* (1826), which acquired great popularity in Germany and especially in Swabia, treating as it did the most interesting period in the history of that country, the reign of Duke Ulrich (1487-1550). While on a journey to France, the Netherlands and north Germany he wrote the second part of the *Memoiren des Satan* and some short novels, among them the charming *Bettlerin vom Pont des Arts* and his masterpiece, the *Phantasien im Bremer Ratskeller* (1827). He also published some short poems which have passed into *Volkslieder*, among them *Morgenrot, Morgenrot, leuchtest mir zum frühen Tod*; and *Steh' ich in finstrer Mitternacht*. In January 1827, Hauff undertook the editorship of the Stuttgart *Morgenblatt* and in the following month married, but his happiness was prematurely cut short by his death from fever on the 18th of November 1827.

Considering his brief life, Hauff was an extraordinarily prolific writer. The freshness and originality of his talent, his inventiveness, and his genial humour have won him a high place among the south German prose writers of the early nineteenth century.

His *Sämtliche Werke* were published, with a biography, by G. Schwab (3 vols., 1830-1834; 5 vols., 18th ed., 1882), and by F. Bobertag (1891-1897), and a selection by M. Mendheim (3 vols., 1891). For his life cf. J. Klaiber, *Wilhelm Hauff, ein Lebensbild* (1881); M. Mendheim, *Hauffs Leben und Werke* (1894); and H. Hofmann, *W. Hauff* (1902).

HAUG, MARTIN (1827-1876), German Orientalist, was born at Ostdorf near Balingen, Württemberg, on the 30th of January 1827. He became a pupil in the gymnasium at Stuttgart at a comparatively late age, and in 1848 he entered the university of Tübingen, where he studied Oriental languages, especially Sanskrit. He afterwards

attended lectures in Göttingen, and in 1854 settled as *Privatdozent* at Bonn. In 1856 he removed to Heidelberg, where he assisted Bunsen in his literary undertakings; and in 1859 he accepted an invitation to India, where he became superintendent of Sanskrit studies and professor of Sanskrit in Poona. Here his acquaintance with the Zend language and literature afforded him excellent opportunities for extending his knowledge of this branch of literature. The result of his researches was a volume of *Essays on the sacred language, writings and religion of the Parsees* (Bombay, 1862). Having returned to Stuttgart in 1866, he was called to Munich as professor of Sanskrit and comparative philology in 1868. He died on the 3rd of June 1876.

Besides the *Essays on the Parsees*, of which a new edition, by E. W. West, greatly enriched from the posthumous papers of the author, appeared in 1878, Haug published a number of works of considerable importance to the student of the literatures of ancient India and Persia. They include *Die Pehlewisprache und der Bundehesch* (1854); *Die Schrift und Sprache der zweiten Keilschriftgattung* (1855); *Die fünf Gathas*, edited, translated and expounded (1858-1860); an edition, with translation and explanation, of the *Aitareya Brahmana of the Rigveda* (Bombay, 1863), which is accounted his best work in the province of ancient Indian literature; *A Lecture on an original Speech of Zoroaster* (1865); *An old Zend-Pahlavi Glossary* (1867); *Über den Charakter der Pehlewisprache* (1869); *Das 18. Kapitel des Wendidad* (1869); *Über das Ardai-Virafnameh* (1870); *An old Pahlavi-Pazand Glossary* (1870); and *Vedische Rätselfragen und Rätselsprüche* (1875).

For particulars of Haug's life and work, see A. Bezzenberger, *Beiträge zur Kunde der indogermanischen Sprachen*, vol. i. pp. 70 seq.

HAUGE, HANS NIELSEN (1771-1824), Norwegian Lutheran divine, was born in the parish of Thunö, Norway, on the 3rd of April 1771, the son of a peasant. With the aid of various religious works which he found in his father's house, he laboured to supplement his scanty education. In his twenty-sixth year, believing himself to be a divinely-commissioned prophet, he began to preach in his native parish and afterwards throughout Norway, calling people to repentance and attacking rationalism. In 1800 he passed to Denmark, where, as at home, he gained many followers and assistants, chiefly among the lower orders. Proceeding to Christiansand in 1804, Hauge set up a printing-press to disseminate his views more widely, but was almost immediately arrested for holding illegal religious meetings, and for insulting the regular clergy in his books, all of which were confiscated; he was also heavily fined. After being in confinement for some years, he was released in 1814 on payment of a fine, and retiring to an estate at Breddwill, near Christiania, he died there on the 29th of March 1824. His adherents, who did not formally break with the church, were called *Haugianer or Leser* (*i.e.* Readers). He unquestionably did much to revive the spiritual life of the northern Lutheran Church. His views were of a pietistic nature. Though he cannot be said to have rejected any article of the Lutheran creed, the peculiar emphasis which he laid upon the evangelical doctrines of faith and grace involved considerable antagonism to the rationalistic or sacerdotal views commonly held by the established clergy.

Hauge's principal writings are *Forsög til Afhandeling om Guds Visdom* (1796); *Anvisning til nogle mörkelige Sprog i Bibelen* (1798); *Forklaring over Loven og Evangelium* (1803). For an account of his life and doctrines see C. Bang's *Hans Nielsen Hauge og hans Samtid* (Christiania; 2nd ed., 1875); O. Rost, *Nogle Bemaerkninger om Hans Nielsen Hauge og hans Retning* (1883), and the article in Herzog-Hauck, *Realencyklopädie*.

HAUGESUND, a seaport of Norway in Stavanger *amt* (county), on the west coast, 34 m. N. by W. of Stavanger. Pop. (1900), 7935. It is an important fishing centre. Herrings are exported to the annual value of £100,000 to £200,000, also mackerel and lobsters. The principal imports are coal and salt. There are factories for woollen goods and a margarine factory. Haugesund is the reputed death-place of Harald Haarfager, to whom an obelisk of red granite was erected in 1872 on the thousandth anniversary of his victory at the Hafsfjord (near Stavanger) whereby he won the sovereignty of Norway. The memorial stands 1¼ m. north of the town, on the Haraldshaug, where the hero's supposed tombstone is shown.

HAUGHTON, SAMUEL (1821-1897), Irish scientific writer, the son of James Haughton (1795-1873), was born at Carlow on the 21st of December 1821. His father, the son of a Quaker, but himself a Unitarian, was an active philanthropist, a strong supporter of Father Theobald Mathew, a vegetarian, and an anti-slavery worker and writer. After a distinguished career in Trinity College, Dublin, Samuel was elected a fellow in 1844. He was ordained priest in 1847, but seldom preached. In 1851 he was appointed professor of geology in Trinity College, and this post he held for thirty years. He began the study of medicine in 1859, and in 1862 took the degree of M.D. in the university of Dublin. He was then made registrar of the Medical School, the status of which he did much to improve, and he represented the university on the General Medical Council from 1878 to 1896. He was elected F.R.S. in 1858, and in course of time Oxford conferred upon him the hon. degree of D.C.L., and Cambridge and Edinburgh that of LL.D. He was a man of remarkable knowledge and ability, and he communicated papers on widely different subjects to various learned societies and scientific journals in London and Dublin. He wrote on the laws of equilibrium and motion of solid and fluid bodies (1846), on sun-heat, terrestrial radiation, geological climates and on tides. He wrote also on the granites of Leinster and Donegal, and on the cleavage and joint-planes in the Old Red Sandstone of Waterford (1857-1858). He was president of the Royal Irish Academy from 1886 to 1891, and for twenty years he was secretary of the Royal Zoological Society of Ireland. He died in Dublin on the 31st of October 1897.

PUBLICATIONS.—*Manual of Geology* (1865); *Principles of Animal Mechanics* (1873); *Six Lectures on Physical Geography* (1880). In conjunction with his friend, Professor J. Galbraith, he issued a series of Manuals of Mathematical and Physical Science.

HAUGHTON, WILLIAM (fl. 1598), English playwright. He collaborated in many plays with Henry Chettle, Thomas Dekker, John Day and Richard Hathway. The only certain biographical information about him is derived from Philip Henslowe, who on the 10th of March 1600 lent him ten shillings "to release him out of the Clink." Mr Fleay credits him with a considerable share in *The Patient Grissill* (1599), and a merry comedy entitled *English-Men for my Money, or A Woman will have her Will* (1598) is ascribed to his sole authorship. *The Devil and his Dame*, mentioned as a forthcoming play by Henslowe in March 1600, is identified by Mr Fleay as *Grim, the Collier of Croydon*, which was printed in 1662. In this play an emissary is sent from the infernal regions to report on the conditions of married life on earth.

Grim is reprinted in vol. viii., and *English-Men for my Money* in vol. x., of W. C. Hazlitt's edition of Dodsley's *Old Plays*.

HAUGWITZ, CHRISTIAN AUGUST HEINRICH KURT, COUNT VON, FREIHERR VON KRAPPITZ (1752-1831), Prussian statesman, was born on the 11th of June 1752, at Peucke near Öls. He belonged to the Silesian (Protestant) branch of the ancient family of Haugwitz, of which the Catholic branch is established in Moravia. He studied law, spent some time in Italy, returned to settle on his estates in Silesia, and in 1791 was elected by the Silesian estates general director of the province. At the urgent instance of King Frederick William II. he entered the Prussian service, became ambassador at Vienna in 1792 and at the end of the same year a member of the cabinet at Berlin.

Haugwitz, who had attended the young emperor Francis II. at his coronation and been present at the conferences held at Mainz to consider the attitude of the German powers towards the Revolution, was opposed to the exaggerated attitude of the French *émigrés* and to any interference in the internal affairs of France. After the war broke out, however, the defiant temper of the Committee of Public Safety made an honourable peace impossible, while the strained relations between Austria and Prussia on the question of territorial "compensations" crippled the power of the Allies to carry the war to a successful conclusion. It was in these circumstances that Haugwitz entered on the negotiations that resulted in the subsidy treaty between Great Britain and Prussia, and Great Britain and Holland, signed at the Hague on the 19th of April 1794. Haugwitz, however, was not the man to direct a strong and aggressive policy; the failure of Prussia to make any effective use of the money supplied broke the patience of Pitt, and in October the denunciation by Great Britain of the Hague treaty broke the last tie that bound Prussia to the Coalition. The separate treaty with France, signed at Basel on the 5th of April 1795, was mainly due to the influence of Haugwitz.

His object was now to save the provinces on the left bank of the Rhine from being lost to the Empire. No guarantee of their maintenance had been inserted in the Basel treaty; but Haugwitz and the king hoped to preserve them by establishing the armed neutrality of North Germany and securing its recognition by the French Republic. This policy was rendered futile by the victories of Napoleon Bonaparte and the virtual conquest of South Germany by the French. Haugwitz, who had continued to enjoy the confidence of the new king, Frederick William III., recognized this fact, and urged his master to join the new Coalition in 1798. But the king clung blindly to the illusion of neutrality, and Haugwitz allowed himself to be made the instrument of a policy of which he increasingly disapproved. It was not till 1803, when the king refused his urgent advice to demand the evacuation of Hanover by the French, that he tendered his resignation. In August 1804 he was definitely replaced by Hardenberg, and retired to his estates.

In his retirement Haugwitz was still consulted, and he used all his influence against Hardenberg's policy of a *rapprochement* with France. His representations had little weight, however, until Napoleon's high-handed action in violating Prussian territory by marching troops through Ansbach, roused the anger of the king. Haugwitz was now once more appointed foreign minister, as Hardenberg's colleague, and it was he who was charged to carry to Napoleon the Prussian ultimatum which was the outcome of the visit of the tsar Alexander I. to Berlin in November. But in this crisis his courage failed him; his nature was one that ever let "I dare not wait upon I will"; he delayed his journey pending some turn in events and to give time for the mobilization of the duke of Brunswick's army; he was frightened by reports of separate negotiations between Austria and Napoleon, not realizing that a bold declaration by Prussia would nip them in the bud. Napoleon, when at last they met, read him like a book and humoured his diplomatic weakness until the whole issue was decided at Austerlitz. On the 15th of December, instead of delivering an ultimatum, Haugwitz signed at Schönbrunn the treaty which gave Hanover to Prussia in return for Ansbach, Cleves and Neuchâtel.

The humiliation of Prussia and her minister was, however, not yet complete. In February 1806 Haugwitz went to Paris to ratify the treaty of Schönbrunn and to attempt to secure some modifications in favour of Prussia. He was received with a storm of abuse by Napoleon, who insisted on tearing up the treaty and drawing up a fresh one, which doubled the amount of territory to be ceded by Prussia and forced her to a breach with Great Britain by binding her to close the Hanoverian ports to British commerce. The treaty, signed on the 15th of February, left Prussia wholly isolated in Europe. What followed belongs to the history of Europe rather than to the biography of Haugwitz. He remained, indeed, at the head of the Prussian ministry of foreign affairs, but the course of Prussian policy it was beyond his power to control. The Prussian ultimatum to Napoleon was forced upon him by overwhelming circumstances, and with the battle of Jena, on the 14th of October, his political career came to an end. He accompanied the flight of the king into East Prussia, there took leave of him and retired to his Silesian estates. In 1811 he was appointed *Curator* of the university of Breslau; in 1820, owing to failing health, he went

to live in Italy, where he remained till his death at Venice in 1831.

Haugwitz was a man of great intellectual gifts, of dignified presence and a charming address which endeared him to his sovereigns and his colleagues; but as a statesman he failed, not through want of perspicacity, but through lack of will power and a fatal habit of procrastination. During his retirement in Italy he wrote memoirs in justification of his policy, a fragment of which dealing with the episode of the treaty of Schönbrunn was published at Jena in 1837.

See J. von Minutoli, *Der Graf von Haugwitz und Job von Witzleben* (Berlin, 1844); L. von Ranke, *Hardenberg u. d. Gesch. des preuss. Staates* (Leipzig, 1879-1881), note on Haugwitz's memoirs in vol. ii.; *Denkwürdigkeiten des Staatskanzlers Fürsten von Hardenberg*, ed. Ranke (5 vols., Leipzig, 1877); A. Sorel, *L'Europe et la Révol. Franç., passim*.

HAUNTINGS (from "to haunt," Fr. *hanter*, of uncertain origin, but possibly from Lat. *ambitare*, *ambire*, to go about, frequent), the supposed manifestations of existence by spirits of the dead in houses or places familiar to them in life. The savage practice of tying up the corpse before burying it is clearly intended to prevent the dead from "walking"; and cremation, whether in savage lands or in classical times, may have originally had the same motive. The "spirit" manifests himself, as a rule, either in his bodily form, as when he lived, or in the shape of some animal, or by disturbing noises, as in the case of the poltergeist (*q.v.*). Classical examples occur in Plautus (*Mostellaria*), Lucian (*Philopseudes*), Pliny, Suetonius, St Augustine, St Gregory, Plutarch and elsewhere, while Lucretius has his theory of apparitions of the dead. He does not deny the fact; he explains it by "films" diffused from the living body and persisting in the atmosphere.

A somewhat similar hypothesis, to account for certain alleged phenomena, was invented by Mr Edmund Gurney. Some visionary appearances in haunted houses do not suggest the idea of an ambulatory spirit, but rather of the photograph of a past event, impressed we know not how on we know not what. In this theory there is no room for the agency of spirits of the dead. The belief in hauntings was naturally persistent through the middle ages, and example and theory abound in the *Loca infesta* (Cologne, 1598) of Petrus Thyraeus, S.J.; Wierius (*c.* 1560), in *De praestigiis daemonum*, is in the same tale. According to Thyraeus, hauntings appeal to the senses of sight, hearing and touch. The auditory phenomena are mainly thumping noises, sounds of footsteps, laughing and moaning. Rackets in general are caused by *lares domestici* ("brownies") or the Poltergeist. In the tactile way ghosts *push* the living; "I have been thrice pushed by an invisible power," writes the Rev. Samuel Wesley, in 1717, in his narrative of the disturbances at his rectory at Epworth. Once he was pushed against the corner of his desk in the study; once up against the door of the matted chamber; and thirdly, "against the right-hand side of the frame of my study door, as I was going in." We have thus Protestant corroboration of the statement of the learned Jesuit.

Thyraeus raises the question, Are the experiences hallucinatory? Did Mr Wesley (to take his case) receive a mere hallucinatory set of pushes? Was the hair of a friend of the writer's, who occupied a haunted house, only pulled in a subjective way? Thyraeus remarks that, in cases of noisy phenomena, not all persons present hear them; and, rather curiously, Mr Wesley records the same experience; he sometimes did not hear sounds that seemed violently loud to his wife and family, who were with him at prayers. Thyraeus says that, as collective hallucinations of sight are rare—all present not usually seeing the apparition—so audible phenomena are not always experienced by all persons present. In such cases, he thinks that the sights and sounds have no external cause, he regards the sights and sounds as delusions—caused by spirits. This is a difficult question. He mentions that we hear all the furniture being tossed about (as Sir Walter and Lady Scott heard it at Abbotsford; see Lockhart's *Life*, v. 311-315). Yet, on inspection, we find all the furniture in its proper place. There is abundant evidence to experience of this phenomenon, which remains as inexplicable as it was in the days of Thyraeus. When the sounds are heard, has the atmosphere vibrated, or has the impression only been made on "the inner ear"? In reply, Mr. Procter, who for sixteen years (1831-1847) endured the unexplained disturbances at Willington Mill, avers that the material objects on which the knocks appeared to be struck did certainly vibrate (see POLTERGEIST). Is then the felt vibration part of the hallucination?

As for visual phenomena, "ghosts," Thyraeus does not regard them as space-filling entities, but as hallucinations imposed by spirits on the human senses; the spirit, in each case, not being necessarily the soul of the dead man or woman whom the phantasm represents.

In the matter of alleged hauntings, the symptoms, the phenomena, to-day, are exactly the same as those recorded by Thyraeus. The belief in them is so far a living thing that it greatly lowers the letting value of a house when it is reported to be haunted. (An action for libelling a house as haunted was reported in the London newspapers of the 7th of March 1907). It is true that ancient family legends of haunts are gloried in by the inheritors of stately homes in England, or castles in Scotland, and to discredit the traditional ghost—in the days of Sir Walter Scott—was to come within measurable distance of a duel. But the time-honoured phantasms of old houses usually survive only in the memory of "the oldest aunt telling the saddest tale." Their historical basis can no more endure criticism than does the family portrait of Queen Mary,—signed by Medina about 1750-1770, and described by the family as "given to our ancestor by the Queen herself." After many years' experience of a baronial dwelling credited with seven distinct and separate phantasms, not one of which was ever seen by hosts, guests or domestics, scepticism as regards traditional ghosts is excusable. Legend reports that they punctually appear on the anniversaries of their misfortunes, but no evidence of such punctuality has been produced.

The Society for Psychical Research has investigated hundreds of cases of the alleged haunting of houses, and the reports are in the archives of the society. But, as the mere rumour of a haunt greatly lowers the value of a house, it is seldom possible to publish the names of the witnesses, and hardly ever permitted to publish the name of the house. From the point of view of science this is unfortunate (see *Proceedings S.P.R.* vol. viii. pp. 311-332 and *Proceedings* of 1882-1883, 1883-1884). As far as inquiry had any results, they were to the following effect. The spectres were of the most shy and fugitive kind, seen now by one person, now by another, crossing a room, walking along a corridor, and entering chambers in which, on inspection, they were not found. There was almost

never any story to account for the appearances, as in magazine ghost-stories, and, if story there were, it lacked evidence. Recognitions of known dead persons were infrequent; occasionally there was recognition of a portrait in the house. The apparitions spoke in only one or two recorded cases, and, as a rule, seemed to have no motive for appearing. The "ghost" resembles nothing so much as a somnambulist, or the dream-walk of one living person made visible, telepathically, to another living person. Almost the only sign of consciousness given by the appearances is their shyness; on being spoken to or approached they generally vanish. Not infrequently they are taken, at first sight, for living human beings. In darkness they are often luminous, otherwise they would be invisible! Unexplained noises often, but not always, occur in houses where these phenomena are perceived. Evidence is only good, approximately, when a series of persons, in the same house, behold the same appearance, without being aware that it has previously been seen by others. Naturally it is almost impossible to prove this ignorance.

When inquirers believe that the appearances are due to the agency of spirits of the dead, they usually suppose the method to be a telepathic impact on the mind of the living by some "mere automatic projection from a consciousness which has its centre elsewhere" (Myers, *Proceedings S.P.R.* vol. xv. p. 64). Myers, in *Human Personality*, fell back on "palaeolithic psychology," and a theory of a phantasmogenetic agency producing a phantasm which had some actual relation to space. But space forbids us to give examples of modern experiences in haunted houses, endured by persons sane, healthy and well educated. The cases, abundantly offered in *Proceedings S.P.R.*, suggest that certain localities, more than others, are "centres of permanent possibilities of being hallucinated in a manner more or less uniform." The causes of this fact (if causes there be, beyond a casual hallucination or illusion of A, which, when reported, begets by suggestion, or, when not reported, by telepathy, hallucinations in B, C, D and E), remain unknown (*Proceedings S.P.R.* vol. viii. p. 133 et seq.). Mr Podmore proposed this hypothesis of causation, which was not accepted by Myers; he thought that the theory laid too heavy a burden on telepathy and suggestion. Neither cause, nor any other cause of similar results, ever affects members of the S.P.R. who may be sent to dwell in haunted houses. They have no weird experiences, except when they are visionaries who see phantoms wherever they go.

(A. L.)

HAUPT, MORITZ (1808-1874), German philologist, was born at Zittau, in Lusatia, on the 27th of July 1808. His early education was mainly conducted by his father, Ernst Friedrich Haupt, burgomaster of Zittau, a man of good scholarly attainment, who used to take pleasure in turning German hymns or Goethe's poems into Latin, and whose memoranda were employed by G. Freytag in the 4th volume of his *Bilder aus der deutschen Vergangenheit*. From the Zittau gymnasium, where he spent the five years 1821-1826, Haupt removed to the university of Leipzig with the intention of studying theology; but the natural bent of his mind and the influence of Professor G. Hermann soon turned all his energies in the direction of philosophy. On the close of his university course (1830) he returned to his father's house, and the next seven years were devoted to quiet work, not only at Greek, Latin and German, but at Old French, Provençal and Bohemian. He formed with Lachmann at Berlin a friendship which had great effect on his intellectual development. In September 1837 he "habilitated" at Leipzig as *Privatdozent*, and his first lectures, dealing with such diverse subjects as Catullus and the *Nibelungenlied*, indicated the twofold direction of his labours. A new chair of German language and literature being founded for his benefit, he became professor extraordinarius (1841) and then professor ordinarius (1843); and in 1842 he married Louise Hermann, the daughter of his master and colleague. But the peaceful and prosperous course opening out before him at the university of Leipzig was brought to a sudden close. Having taken part in 1849 with Otto Jahn and Theodor Mommsen in a political agitation for the maintenance of the imperial constitution, Haupt was deprived of his professorship by a decree of the 22nd of April 1851. Two years later, however, he was called to succeed Lachmann at the university of Berlin; and at the same time the Berlin academy, which had made him a corresponding member in 1841, elected him an ordinary member. For twenty-one years he continued to hold a prominent place among the scholars of the Prussian capital, making his presence felt, not only by the prestige of his erudition and the clearness of his intellect, but by the tirelessness of his energy and the ardent fearlessness of his temperament. He died, of heart disease, on the 5th of February 1874.

Haupt's critical work is distinguished by a happy union of the most painstaking investigation with intrepidity of conjecture, and while in his lectures and addresses he was frequently carried away by the excitement of the moment, and made sharp and questionable attacks on his opponents, in his writings he exhibits great self-control. The results of many of his researches are altogether lost, because he could not be prevailed upon to publish what fell much short of his own high ideal of excellence. To the progress of classical scholarship he contributed by *Quaestiones Catullianae* (1837), *Observationes criticae* (1841), and editions of Ovid's *Halieutica* and the *Cynegetica* of Gratius and Nemesianus (1838), of Catullus, Tibullus and Propertius (3rd ed., 1868), of Horace (3rd ed., 1871) and of Virgil (2nd ed., 1873). As early as 1836, with Hoffmann von Fallersleben, he started the *Altdeutsche Blätter*, which in 1841 gave place to the *Zeitschrift für deutsches Altertum*, of which he continued editor till his death. Hartmann von Aue's *Erec* (1839) and his *Lieder*, *Büchlein* and *Der arme Heinrich* (1842), Rudolf von Ems's *Guter Gerhard* (1840) and Conrad von Würzburg's *Engelhard* (1844) are the principal German works which he edited. To form a collection of the French songs of the 16th century was one of his favourite schemes, but a little volume published after his death, *Französische Volkslieder* (1877), is the only monument of his labours in that direction. Three volumes of his *Opuscula* were published at Leipzig (1875-1877).

See Kirchhoff, "Gedächtnisrede," in *Abhandl. der Königl. Akad. der Wissenschaften zu Berlin* (1875); Otto Belger, *Moritz Haupt als Lehrer* (1879); Sandys, *Hist. Class. Schol.* iii. (1908).

HAUPTMANN, GERHART (1862-), German dramatist, was born on the 15th of November 1862 at Obersalzbrunn in Silesia, the son of an hotel-keeper. From the village school of his native place he passed to the

Realschule in Breslau, and was then sent to learn agriculture on his uncle's farm at Jauer. Having, however, no taste for country life, he soon returned to Breslau and entered the art school, intending to become a sculptor. He then studied at Jena, and spent the greater part of the years 1883 and 1884 in Italy. In May 1885 Hauptmann married and settled in Berlin, and, devoting himself henceforth entirely to literary work, soon attained a great reputation as one of the chief representatives of the modern drama. In 1891 he retired to Schreiberhau in Silesia. Hauptmann's first drama, *Vor Sonnenaufgang* (1889) inaugurated the realistic movement in modern German literature; it was followed by *Das Friedensfest* (1890), *Einsame Menschen* (1891) and *Die Weber* (1892), a powerful drama depicting the rising of the Silesian weavers in 1844. Of Hauptmann's subsequent work mention may be made of the comedies *Kollege Crampton* (1892), Der Biberpelz (1893) and *Der rote Hahn* (1901), a "dream poem," *Hannele* (1893), and an historical drama *Florian Geyer* (1895). He also wrote two tragedies of Silesian peasant life, *Fuhrmann Henschel* (1898) and *Rose Berndt* (1903), and the "dramatic fairy-tales" *Die versunkene Glocke* (1897) and *Und Pippa tanzt* (1905). Several of his works have been translated into English.

Biographies of Hauptmann and critical studies of his dramas have been published by A. Bartels (1897); P. Schlenther (1898); and U. C. Woerner (2nd ed., 1900). See also L. Benoist-Hanappier, *Le Drame naturaliste en Allemagne* (1905).

HAUPTMANN, MORITZ (1792-1868), German musical composer and writer, was born at Dresden, on the 13th of October 1792, and studied music under Scholz, Lanska, Grosse and Morlacchi, the rival of Weber. Afterwards he completed his education as a violinist and composer under Spohr, and till 1820 held various appointments in private families, varying his musical occupations with mathematical and other studies bearing chiefly on acoustics and kindred subjects. For a time also Hauptmann was employed as an architect, but all other pursuits gave place to music, and a grand tragic opera, *Mathilde*, belongs to the period just referred to. In 1822 he entered the orchestra of Cassel, again under Spohr's direction, and it was then that he first taught composition and musical theory to such men as Ferdinand David, Burgmüller, Kiel and others. His compositions at this time chiefly consisted of motets, masses, cantatas and songs. His opera *Mathilde* was performed at Cassel with great success. In 1842 Hauptmann obtained the position of cantor at the Thomas-school of Leipzig (long previously occupied by the great Johann Sebastian Bach) together with that of professor at the conservatoire, and it was in this capacity that his unique gift as a teacher developed itself and was acknowledged by a crowd of enthusiastic and more or less distinguished pupils. He died on the 3rd of January 1868, and the universal regret felt at his death at Leipzig is said to have been all but equal to that caused by the loss of his friend Medelssohn many years before. Hauptmann's compositions are marked by symmetry and perfection of workmanship rather than by spontaneous invention.

Amongst his vocal compositions—by far the most important portion of his work—may be mentioned two masses, choral songs for mixed voices (*Op.* 32, 47), and numerous part songs. The results of his scientific research were embodied in his book *Die Natur der Harmonik und Metrik* (1853), a standard work of its kind, in which a philosophic explanation of the forms of music is attempted.

HAURÉAU, (JEAN) BARTHÉLEMY (1812-1896), French historian and miscellaneous writer, was born in Paris. At the age of twenty he published a series of apologetic studies on the *Montagnards*. In later years he regretted the youthful enthusiasm of these papers, and endeavoured to destroy the copies. He joined the staff of the *National*, and was praised by Théophile Gautier as the "tribune" of romanticism. At that time he seemed to be destined to a political career, and, indeed, after the revolution of the 24th of February 1848 was elected member of the National Assembly; but close contact with revolutionary men and ideas gradually cooled his old ardour. Throughout his life he was an enemy to innovators, not only in politics and religion, but also in literature. This attitude sometimes led him to form unjust estimates, but only on very rare occasions, for his character was as just as his erudition was scrupulous. After the *coup d'état* he resigned his position as director of the MS. department of the Bibliothèque Nationale, to which he had been appointed in 1848, and he refused to accept any administrative post until after the fall of the empire. After having acted as director of the national printing press from 1870 to 1881, he retired, but in 1893 accepted the post of director of the Fondation Thiers. He was also a member of the council of improvement of the École des Chartes. He died on the 29th of April 1896. For over half a century he was engaged in writing on the religious, philosophical, and more particularly the literary history of the middle ages. Appointed librarian of the town of Le Mans in 1838, he was first attracted by the history of Maine, and in 1843 published the first volume of his *Histoire littéraire du Maine* (4 vols., 1843-1852), which he subsequently recast on a new plan (10 vols., 1870-1877). In 1845 he brought out an edition of vol. ii. of G. Ménage's *Histoire de Sablé*. He then undertook the continuation of the *Gallia Christiana*, and produced vol. xiv. (1856) for the province of Tours, vol. xv. (1862) for the province of Besançon, and vol. xvi. (1865-1870) for the province of Vienne. This important work gained him admission to the Académie des Inscriptions et Belles-Lettres (1862). In the *Notices et extraits des manuscrits* he inserted several papers which were afterwards published separately, with additions and corrections, under the title *Notices et extraits de quelques manuscrits de la Bibliothèque Nationale* (6 vols., 1890-1893). To the *Histoire littéraire de la France* he contributed a number of studies, among which must be mentioned that relating to the sermon-writers (vol. xxvi., 1873), whose works, being often anonymous, raise many problems of attribution, and, though deficient in originality of thought and style, reflect the very spirit of the middle ages. Among his other works mention must be made of his remarkable *Histoire de la philosophie scolastique* (1872-1880), extending from the time of Charlemagne to the 13th century, which was expanded from a paper crowned by the Académie des Sciences Morales et Politiques in 1850; *Les Mélanges poétiques d'Hildebert de Lavardin* (1882); an edition of the *Works* of Hugh of St Victor (1886); a critical study of the Latin poems attributed to St Bernard (1890); and *Bernard Délicieux et l'inquisition albigeoise* (1877). To these must be added his contributions to the *Dictionnaire des sciences philosophiques*, Didot's *Biographie*

générale, the *Bibliothèque de l'École des Chartes*, and the *Journal des savants*. From the time of his appointment to the Bibliothèque Nationale up to the last days of his life he was engaged in making abstracts of all the medieval Latin writings (many anonymous or of doubtful attribution) relating to philosophy, theology, grammar, canon law, and poetry, carefully noting on cards the first words of each passage. After his death this index of *incipits*, arranged alphabetically, was presented to the Académie des Inscriptions, and a copy was placed in the MS. department of the Bibliothèque Nationale.

See obituary notice read by Henri Wallon at a meeting of the Académie des Inscriptions on the 12th of November 1897; and the notice by Paul Meyer prefixed to vol. xxxiii. of the *Histoire littéraire de la France*.

HAUSA, sometimes incorrectly written Haussa, Houssa or Haoussa, a people inhabiting about half a million square miles in the western and central Sudan from the river Niger in the west to Bornu in the east. Heinrich Barth identifies them with the Atarantians of Herodotus. According to their own traditions the earliest home of the race was the divide between the Sokoto and Chad basins, and more particularly the eastern watershed, whence they spread gradually westward. In the middle ages, to which period the first authentic records refer, the Hausa, though never a conquering race, attained great political power. They were then divided into seven states known as "Hausa bokoy" ("the seven Hausa") and named Biram, Daura, Gober, Kano, Rano, Katsena and Zegzeg, after the sons of their legendary ancestor. This confederation extended its authority over many of the neighbouring countries, and remained paramount till the Fula under Sheikh Dan Fodio in 1810 conquered the Hausa states and founded the Fula empire of Sokoto (see Fula).

The Hausa, who number upwards of 5,000,000, form the most important nation of the central Sudan. They are undoubtedly nigritic, though in places with a strong crossing of Fula and Arab blood. Morally and intellectually they are, however, far superior to the typical Negro. They are a powerful, heavily built race, with skin as black as most Negroes, but with lips not so thick nor hair so woolly. They excel in physical strength. The average Hausa will carry on his head a load of ninety or a hundred pounds without showing the slightest signs of fatigue during a long day's march. When carrying their own goods it is by no means uncommon for them to take double this weight. They are a peaceful and industrious people, living partly in farmsteads amid their crops, partly in large trading centres such as Kano, Katsena and Yakoba (Bauchi). They are extremely intelligent and even cultured, and have exercised a civilizing effect upon their Fula conquerors to whose oppressive rule they submitted. They are excellent agriculturists, and, almost unaided by foreign influence, they have developed a variety of industries, such as the making of cloth, mats, leather and glass. In Sierra Leone and the Gold Coast territory they form the backbone of the military police, and under English leadership have again and again shown themselves to be admirable fighters and capable of a high degree of discipline and good conduct. Their food consists chiefly of guinea corn (*sorghum vulgare*), which is ground up and eaten as a sort of porridge mixed with large quantities of red pepper. The Hausa attribute their superiority in strength to the fact that they live on guinea corn instead of yams and bananas, which form the staple food of the tribes on the river Niger. The Hausa carried on agriculture chiefly by slave labour; they are themselves born traders, and as such are to be met with in almost every part of Africa north of the equator. Small colonies of them are to be found in towns as far distant from one another as Lagos, Tunis, Tripoli, Alexandria and Suakin.

Language.—The Hausa language has a wider range over Africa north of the equator, south of Barbary and west of the valley of the Nile, than any other tongue. It is a rich sonorous language, with a vocabulary containing perhaps 10,000 words. As an example of the richness of the vocabulary Bishop Crowther mentions that there are eight names for different parts of the day from cockcrow till after sunset. About a third of the words are connected with Arabic roots, nor are these such as the Hausa could well have borrowed in anything like recent times from the Arabs. Many words representing ideas or things with which the Hausa must have been familiar from the very earliest time are obviously connected with Arabic or Semitic roots. There is a certain amount of resemblance between the Hausa language and that spoken by the Berbers to the south of Tripoli and Tunis. This language, again, has several striking points of resemblance with Coptic. If, as seems likely, the connexion between these three languages should be demonstrated, such connexion would serve to corroborate the Hausa tradition that their ancestors came from the very far east away beyond Mecca. The Hausa language has been reduced to writing for at least a century, possibly very much longer. It is the only language in tropical Africa which has been reduced to writing by the natives themselves, unless the Vai alphabet, introduced by a native inventor in the interior of Liberia in the first half of the 19th century be excepted; the character used is a modified form of Arabic. Some fragments of literature exist, consisting of political and religious poems, together with a limited amount of native history. A volume, consisting of history and poems reproduced in facsimile, with translations, has been published by the Cambridge University Press.

Religion.—About one-third of the people are professed Mahommedans, one-third are heathen, and the remainder have apparently no definite form of religion. Their Mahommedanism dates from the 14th century, but became more general when the Fula sheikh Dan Fodio initiated the religious war which ended in the founding of the Fula empire. Ever since then the ruler of Sokoto has been acknowledged as the religious head of the whole country, and tribute has been paid to him as such. The Hausa who profess Mahommedanism are extremely ignorant of their own faith, and what little religious fanaticism exists is chiefly confined to the Fula. Large numbers of the Hausa start every year on the pilgrimage to Mecca, travelling sometimes across the Sahara desert and by way of Tripoli and Alexandria, sometimes by way of Wadai, Darfur, Khartum and Suakin. The journey often occupies five or six years, and is undertaken quite as much from trading as from religious motives. Mahommedanism is making very slow, if any, progress amongst the Hausa. The greatest obstacle to its general acceptance is the institution of the Ramadan fast. In a climate so hot as that of Hausaland, the obligation to abstain from food and drink from sunrise to sunset during one month in the year is a serious difficulty. Until the last decade of the 19th century no important attempt had been made to introduce Christianity, but the fact that the Hausa are fond of reading, and that native schools exist in all parts of the country, should greatly facilitate the work of Christian missionaries.

Bibliography.—El Hage Abd Salam Shabeeny, *Account of Timbuctoo and Haussa Territories* (1820); Norris, *Dialogues and part of the New Testament in the English, Arabic, Haussa and Bornu Languages* (1853); Koelle, *Polyglotta Africana* (1854); Schön, *Grammar of the Hausa Language* (London, 1862), *Hausa Reading Book* (1877),

and also *A Dictionary of the Hausa Language* (1877). Schön has also produced Hausa translations of Gen. (1858), Matt. (1857) and Luke (1858). Heinrich Barth, *Travels in North and Central Africa* (2 vols., London, 1857); *Central-afrikanische Vokabularien* (Gotha, 1867); C. H. Robinson, *Hausaland, or Fifteen Hundred Miles through the Central Soudan* (1896); *Specimens of Hausa Literature* (1896); *Hausa Grammar* (1897); *Hausa Dictionary* (1899); P. L. Monteil, *De St-Louis à Tripoli par le lac Tchad* (Paris, 1895); Lt. Seymour Vandeleur, *Campaigning on the Upper Nile and Niger* (1898).

HAUSER, KASPAR, a German youth whose life was remarkable from the circumstances of apparently inexplicable mystery in which it was involved. He appeared on the 26th of May 1828, in the streets of Nuremberg, dressed in the garb of a peasant, and with such a helpless and bewildered air that he attracted the attention of the passers-by. In his possession was found a letter purporting to be written by a poor labourer, stating that the boy was given into his custody on the 7th of October 1812, and that according to agreement he had instructed him in reading, writing, and the Christian religion, but that up to the time fixed for relinquishing his custody he had kept him in close confinement. Along with this letter was enclosed another purporting to be written by the boy's mother, stating that he was born on the 30th of April 1812, that his name was Kaspar, and that his father, formerly a cavalry officer in the 6th regiment at Nuremberg, was dead. The appearance, bearing, and professions of the youth corresponded closely with these credentials. He showed a repugnance to all nourishment except bread and water, was seemingly ignorant of outward objects, wrote his name as Kaspar Hauser, and said that he wished to be a cavalry officer like his father. For some time he was detained in prison at Nuremberg as a vagrant, but on the 18th of July 1828 he was delivered over by the town authorities to the care of a schoolmaster, Professor Daumer, who undertook to be his guardian and to take the charge of his education. Further mysteries accumulated about Kaspar's personality and conduct, not altogether unconnected with the vogue in Germany, at that time, of "animal magnetism," "somnambulism," and similar theories of the occult and strange. People associated him with all sorts of possibilities. On the 17th of October 1829 he was found to have received a wound in the forehead, which, according to his own statement, had been inflicted on him by a man with a blackened face. Having on this account been removed to the house of a magistrate and placed under close surveillance, he was visited by Earl Stanhope, who became so interested in his history that he sent him in 1832 to Ansbach to be educated under a certain Dr Meyer. After this he became clerk in the office of Paul John Anselm von Feuerbach, president of the court of appeal, who had begun to pay attention to his case in 1828; and his strange history was almost forgotten by the public when the interest in it was suddenly revived by his receiving a deep wound on his left breast, on the 14th of December 1833, and dying from it three or four days afterwards. He affirmed that the wound was inflicted by a stranger, but many believed it to be the work of his own hand, and that he did not intend it to be fatal, but only so severe as to give a sufficient colouring of truth to his story. The affair created a great sensation, and produced a long literary agitation. But the whole story remains somewhat mysterious. Lord Stanhope eventually became decidedly sceptical as to Kaspar's stories, and ended by being accused of contriving his death!

In 1830 a pamphlet was published at Berlin, entitled *Kaspar Hauser nicht unwahrscheinlich ein Betrüger*; but the truthfulness of his statements was defended by Daumer, who published *Mitteilungen über Kaspar Hauser* (Nuremberg, 1832), and *Enthüllungen über Kaspar Hauser* (Frankfort, 1859); as well as *Kaspar Hauser, sein Wesen, seine Unschuld*, &c. (Regensburg, 1873), in answer to Meyer's (a son of Kaspar's tutor) *Authentische Mitteilungen über Kaspar Hauser* (Ansbach, 1872). Feuerbach awakened considerable psychological interest in the case by his pamphlet *Kaspar Hauser, Beispiel eines Verbrechens am Seelenleben* (Ansbach, 1832), and Earl Stanhope also took part in the discussion by publishing *Materialien zur Geschichte K. Hausers* (Heidelberg, 1836). The theory of Daumer and Feuerbach and other pamphleteers (finally presented in 1892 by Miss Elizabeth E. Evans in her *Story of Kaspar Hauser from Authentic Records*) was that the youth was the crown prince of Baden, the legitimate son of the grand-duke Charles of Baden, and that he had been kidnapped at Karlsruhe in October 1812 by minions of the countess of Hochberg (morganatic wife of the grand-duke) in order to secure the succession to her offspring; but this theory was answered in 1875 by the publication in the Augsburg *Allgemeine Zeitung* of the official record of the baptism, post-mortem examination and burial of the heir supposed to have been kidnapped. See *Kaspar Hauser und sein badisches Prinzentum* (Heidelberg, 1876). In 1883 the story was again revived in a Regensburg pamphlet attacking, among other people, Dr Meyer; and the sons of the latter, who was dead, brought an action for libel, under the German law, to which no defence was made; all the copies of the pamphlet were ordered to be destroyed. The evidence has been subtly analyzed by Andrew Lang in his *Historical Mysteries* (1904), with results unfavourable to the "romantic" version of the story. Lang's view is that possibly Kaspar was a sort of "ambulatory automatist," an instance of a phenomenon, known by other cases to students of psychical abnormalities, of which the characteristics are a mania for straying away and the persistence of delusions as to identity; but he inclines to regard Kaspar as simply a "humbug." The "authentic records" purporting to confirm the kidnapping story Lang stigmatizes as "worthless and impudent rubbish." The evidence is in any case in complete confusion.

HAUSMANN, JOHANN FRIEDRICH LUDWIG (1782-1859), German mineralogist, was born at Hanover on the 22nd of February 1782. He was educated at Göttingen, where he obtained the degree of Ph.D. After making a geological tour in Denmark, Norway and Sweden in 1807, he was two years later placed at the head of a government mining establishment in Westphalia, and he established a school of mines at Clausthal in the Harz mountains. In 1811 he was appointed professor of technology and mining, and afterwards of geology and mineralogy in the university of Göttingen, and this chair he occupied until a short time before his death. He was also for many years secretary of the Royal Academy of Sciences of Göttingen. He published observations on geology and mineralogy in Spain and Italy as well as in central and northern Europe: he wrote on gypsum, pyrites, felspar, tachylite, cordierite and on some eruptive rocks, and he devoted much attention to the crystals developed during metallurgical processes. He died at Hanover on the 26th of December 1859.

PUBLICATIONS.—*Grundlinien einer Encyklopädie der Bergwerkswissenschaften* (1811); *Reise durch Skandinavien* (5 vols., 1811-1818); *Handbuch der Mineralogie* (3 vols., 1813; 2nd ed., 1828-1847).

HAUSRATH, ADOLPH (1837-1909), German theologian, was born at Karlsruhe on the 13th of January 1837 and was educated at Jena, Göttingen, Berlin and Heidelberg, where he became *Privatdozent* in 1861, professor extraordinary in 1867 and ordinary professor in 1872. He was a disciple of the Tübingen school and a strong Protestant. Among other works he wrote *Der Apostel Paulus* (1865), *Neutestamentliche Zeitgeschichte* (1868-1873, 4 vols.; Eng. trans.), *D. F. Strauss und die Theologie seiner Zeit* (1876-1878, 2 vols.), and lives of *Richard Rothe* (2 vols. 1902), and *Luther* (1904). His scholarship was sound and his style vigorous. Under the pseudonym George Taylor he wrote several historical romances, especially *Antinous* (1880), which quickly ran through five editions, and is the story of a soul "which courted death because the objective restraints of faith had been lost." *Klytia* (1883) was a 16th-century story, *Jetta* (1884) a tale of the great immigrations, and *Elfriede* "a romance of the Rhine." He died on the 2nd of August 1909.

HÄUSSER, LUDWIG (1818-1867), German historian, was born at Kleeburg, in Alsace. Studying philology at Heidelberg in 1835, he was led by F. C. Schlosser to give it up for history, and after continuing his historical work at Jena and teaching in the gymnasium at Wertheim he made his mark by his *Die teutschen Geschichtsschreiber vom Anfang des Frankenreichs bis auf die Hohenstaufen* (1839). Next year appeared his *Sage von Tell*. After a short period of study in Paris on the French Revolution, he spent some time working in the archives of Baden and Bavaria, and published in 1845 *Die Geschichte der rheinischen Pfalz*, which won for him a professorship *extraordinarius* at Heidelberg. In 1850 he became *professor ordinarius*. Häusser also interested himself in politics while at Heidelberg, publishing in 1846 *Schleswig-Holstein, Dänemark und Deutschland*, and editing with Gervinus the *Deutsche Zeitung*. In 1848 he was elected to the lower legislative chamber of Baden, and in 1850 advocated the project of union with Prussia at the parliament held at Erfurt. Another timely work was his edition of Friedrich List's *Gesammelte Schriften* (1850), accompanied with a life of the author. His greatest achievement, and the one on which his fame as an historian rests, is his *Deutsche Geschichte vom Tode Friedrichs des Grossen bis zur Gründung des deutschen Bundes* (Leipzig, 1854-1857, 4 vols.). This was the first work covering that period based on a scientific study of the archival sources. In 1859 he again took part in politics, resuming his place in the lower chamber, opposing in 1863 the project of Austria for the reform of the Confederation brought forward in the assembly of princes at Frankfort, in his book *Die Reform des deutschen Bundestages*, and becoming one of the leaders of the "little German" (*kleindeutsche*) party, which advocated the exclusion of Austria from Germany. In addition to various essays (in his *Gesammelte Schriften*, Berlin, 1869-1870, 2 vols.), Häusser's lectures have been edited by W. Oncken in the *Geschichte des Zeitalters der Reformation* (1869, 2nd ed. 1880), and *Geschichte der französischen Revolution* (1869, 2nd ed. 1870). These lectures reveal all the charm of style and directness of presentation which made Häusser's work as a professor so vital.

See W. Wattenbach, *Lud. Häusser, ein Vortrag* (Heidelberg, 1867).

HAUSSMANN, GEORGES EUGÈNE, BARON (1809-1891), whose name is associated with the rebuilding of Paris, was born in that city on the 27th of March 1809 of a Protestant family, German in origin. He was educated at the Collège Henri IV, and subsequently studied law, attending simultaneously the classes at the Paris conservatoire of music, for he was a good musician. He became sous-préfet of Nérac in 1830, and advanced rapidly in the civil service until in 1853 he was chosen by Persigny prefect of the Seine in succession to Jean Jacques Berger, who hesitated to incur the vast expenses of the imperial schemes for the embellishment of Paris. Haussmann laid out the Bois de Boulogne, and made extensive improvements in the smaller parks. The gardens of the Luxembourg Palace were cut down to allow of the formation of new streets, and the Boulevard de Sebastopol, the southern half of which is now the Boulevard St Michel, was driven through a populous district. A new water supply, a gigantic system of sewers, new bridges, the opera, and other public buildings, the inclusion of outlying districts—these were among the new prefect's achievements, accomplished by the aid of a bold handling of the public funds which called forth Jules Ferry's indictment, *Les Comptes fantastiques de Haussmann*, in 1867. A loan of 250 million francs was sanctioned for the city of Paris in 1865, and another of 260 million in 1869. These sums represented only part of his financial schemes, which led to his dismissal by the government of Émile Ollivier. After the fall of the Empire he spent about a year abroad, but he re-entered public life in 1877, when he became Bonapartist deputy for Ajaccio. He died in Paris on the 11th of January 1891. Haussmann had been made senator in 1857, member of the Academy of Fine Arts in 1867, and grand cross of the Legion of Honour in 1862. His name is preserved in the Boulevard Haussmann. His later years were occupied with the preparation of his *Mémoires* (3 vols., 1890-1893).

HAUSSONVILLE, JOSEPH OTHENIN BERNARD DE CLÉRON, COMTE D' (1809-1884), French politician and

historian, was born in Paris on the 27th of May 1809. His grandfather had been “grand louvetier” of France; his father Charles Louis Bernard de Cléron, comte d’Haussonville (1770-1846), was chamberlain at the court of Napoleon, a count of the French empire, and under the Restoration a peer of France and an opponent of the Villéle ministry. Comte Joseph had filled a series of diplomatic appointments at Brussels, Turin and Naples before he entered the chamber of deputies in 1842 for Provins. Under the Second Empire he published a liberal anti-imperial paper at Brussels, *Le Bulletin français*, and in 1863 he actively supported the candidature of Prévost Paradol. He was elected to the French Academy in 1869, in recognition of his historical writings, *Histoire de la politique extérieure du gouvernement français de 1830 à 1848* (2 vols., 1850), *Histoire de la réunion de la Lorraine à la France* (4 vols., 1854-1859), *L’Église romaine et le premier empire 1800-1814* (5 vols., 1864-1879). In 1870 he published a pamphlet directed against the Prussian treatment of France, *La France et la Prusse devant l’Europe*, the sale of which was prohibited in Belgium at the request of King William of Prussia. He was the president of an association formed to provide new homes in Algeria for the inhabitants of Alsace-Lorraine who elected to retain their French nationality. In 1878 he was made a life-senator, in which capacity he allied himself with the Right Centre in defence of the religious associations against the anti-clericals. He died in Paris on the 28th of May 1884.

His wife Louise (1818-1882), a daughter of Duc Victor de Broglie, published in 1858 a novel *Robert Emmet*, followed by *Marguerite de Valois reine de Navarre* (1870), *La Jeunesse de Lord Byron* (1872), and *Les Dernières Années de Lord Byron* (1874).

His son, Gabriel Paul Otherin de Cléron, comte d’Haussonville, was born at Gurcy de Châtel (Seine-et-Marne) on the 21st of September 1843, and married in 1865 Mlle Pauline d’Harcourt. He represented Seine-et-Marne in the National Assembly (1871) and voted with the Right Centre. Though he was not elected to the chamber of deputies he became the right-hand man of his maternal uncle, the duc de Broglie, in the attempted coup of the 16th of May. His *Établissements pénitentiaires en France et aux colonies* (1875) was crowned by the Academy, of which he was admitted a member in 1888. In 1891 the resignation of Henri Édouard Bocher from the administration of the Orleans estates led to the appointment of M d’Haussonville as accredited representative of the comte de Paris in France. He at once set to work to strengthen the Orleanist party by recruiting from the smaller nobility the officials of the local monarchical committees. He established new Orleanist organs, and sent out lecturers with instructions to emphasize the modern and democratic principles of the comte de Paris; but the prospects of the party were dashed in 1894 by the death of the comte de Paris. In 1904 he was admitted to the Academy of Moral and Political Science. The comte d’Haussonville published:—*C. A. Sainte-Beuve, sa vie et ses œuvres* (1875), *Études biographiques et littéraires*, 2 series (1879 and 1888), *Le Salon de Mme Necker* (1882, 2 vols.), *Madame de La Fayette* (1891), *Madame Ackermann* (1892), *Le Comte de Paris, souvenirs personnels* (1895), *La Duchesse de Bourgogne et l’alliance savoyarde* (1898-1903), *Salaire et misères de femme* (1900), and, with G. Hanotaux, *Souvenirs sur Madame de Maintenon* (3 vols., 1902-1904).

HAUTE-GARONNE, a frontier department of south-western France, formed in 1790 from portions of the provinces of Languedoc (Toulousain and Lauraguais) and Gascony (Comminges and Nébouzan). Pop. (1906), 442,065. Area, 2458 sq. m. It is bounded N. by the department of Tarn-et-Garonne, E. by Tarn, Aude and Ariége, S. by Spain and W. by Gers and Hautes-Pyrénées. Long and narrow in shape, the department consists in the north of an undulating stretch of country with continual interchange of hill and valley nowhere thrown into striking relief; while towards the south the land rises gradually to the Pyrenees, which on the Spanish border attain heights of upwards of 10,000 ft. Two passes, the Port d’Oo, near the beautiful lake and waterfall of Oo, and the Port de Vénasque, exceed 9800 and 7900 ft. in altitude respectively. Entering the department in the south-east, the Garonne flows in a northerly direction and traverses almost its entire length, receiving in its course the Pique, the Salat, the Louge, the Ariége, the Touch and the Save. Except in the mountainous region the climate is mild, the mean annual temperature being rather higher than that of Paris. The rainfall, which averages 24 in. at Toulouse, exceeds 40 in. in some parts of the mountains; and sudden and destructive inundations of the Garonne —of which that of 1875 is a celebrated example—are always to be feared. The valley of the Garonne is also frequently visited by severe hail-storms. Thick forests of oak, fir and pine exist in the mountains and furnish timber for shipbuilding. The arable land of the plains and valleys is well adapted for the cultivation of wheat, maize and other grain crops; and the produce of cereals is generally much more than is required for the local consumption. Market-gardening flourishes around Toulouse. A large area is occupied by vineyards, though the wine is only of medium quality; and chestnuts, apples and peaches are grown. As pasture land is abundant a good deal of attention is given to the rearing of cattle and sheep, and co-operative dairies are numerous in the mountains; but deforestation has tended to reduce the area of pasture-land, because the soil, unretained by the roots of trees, has been gradually washed away. Haute-Garonne has deposits of zinc and lead, and salt-workings; there is an ancient and active marble-working industry at St Béat. Mineral springs are common, those of Bagnères-de-Luchon Encausse, Barbazan and Salies-du-Salat being well known. The manufactures are various though not individually extensive, and include iron and copper goods, woollen, cotton and linen goods, leather, paper, boots and shoes, tobacco and table delicacies. Flour-mills, iron-works and brick-works are numerous. Railway communication is furnished by the Southern and the Orléans railways, the main line of the former from Bordeaux to Cette passing through Toulouse. The Canal du Midi traverses the department for 32 m. and the lateral canal of the Garonne for 15 m. The Garonne is navigable below its confluence with the Salat. There are four arrondissements—Toulouse, Villefranche, Muret and St Gaudens, subdivided into 39 cantons and 588 communes. The chief town is Toulouse, which is the seat of a court of appeal and of an archbishop, the headquarters of the XVIIth army corps and the centre of an academy; and St Gaudens, Bagnères-de-Luchon and, from an architectural and historical standpoint, St Bertrand-de-Comminges are of importance and receive separate treatment. Other places of interest are St Aventin, Montsaunès and Vénerque, which possess ancient churches in the Romanesque style. The church of St Just at Valcabrère is of still greater age, the choir dating from the 8th or 9th century and part of the nave from the 11th century. There are ruins of a celebrated Cistercian abbey at Bonnefont near St Martory. Gallo-Roman remains and works of art have been discovered at Martres. Near Revel is the fine reservoir of St Ferréol, constructed for the canal du Midi in the 17th century.

HAUTE-LOIRE, a department of central France, formed in 1790 of Velay and portions of Vivarais and Gévaudan, three districts formerly belonging to the old province of Languedoc, of a portion of Forez formerly belonging to Lyonnais, and a portion of lower Auvergne. Pop. (1906), 314,770. Area, 1931 sq. m. It is bounded N. by Puy-de-Dôme and Loire, E. by Loire and Ardèche, S. by Ardèche and Lozère and W. by Lozère and Cantal. Haute-Loire, which is situated on the central plateau of France, is traversed from north to south by four mountain ranges. Its highest point, the Mont Mézenc (5755 ft.), in the south-east of the department, belongs to the mountains of Vivarais, which are continued along the eastern border by the Boutières chain. The Lignon divides the Boutières from the Massif du Mégal, which is separated by the Loire itself from the mountains of Velay, a granitic range overlaid with the eruptions of more than one hundred and fifty craters. The Margeride mountains run along the western border of the department. The Loire enters the department at a point 16 m. distant from its source in Ardèche, and first flowing northwards and then north-east, waters its eastern half. The Allier, which joins the Loire at Nevers, traverses the western portion of Haute-Loire in a northerly direction. The chief affluents of the Loire within the limits of the department are the Borne on the left, joining it near Le Puy, and the Lignon, which descends from the Mézenc, between the Boutières and Mégal ranges, on the right. The climate, owing to the altitude, the northward direction of the valleys, and the winds from the Cévennes, is cold, the winters being long and rigorous. Storms and violent rains are frequent on the higher grounds, and would give rise to serious inundations were not the rivers for the most part confined within deep rocky channels. Cereals, chiefly rye, oats, barley and wheat, are cultivated in the lowlands and on the plateaus, on which aromatic and medicinal plants are abundant. Lentils, peas, mangel-wurzels and other forage and potatoes are also grown. Horned cattle belong principally to the Mézenc breed; goats are numerous. The woods yield pine, fir, oak and beech. Lace-making, which employs about 90,000 women, and coal-mining are main industries; the coal basins are those of Brassac and Langeac. There are also mines of antimony and stone-quarries. Silk-milling, caoutchouc-making, various kinds of smith’s work, paper-making, glass-blowing, brewing, wood-sawing and flour-milling are also carried on. The principal imports are flour, brandy, wine, live-stock, lace-thread and agricultural implements. Exports include fat stock, wool, aromatic plants, coal, lace. The department is served chiefly by the Paris-Lyon-Méditerranée company. There are three arrondissements—Le Puy, Brioude and Yssingeaux, with 28 cantons and 265 communes.

Haute-Loire forms the diocese of Le Puy and part of the ecclesiastical province of Bourges, and belongs to the academie (educational division) of Clermont-Ferrand. Its court of appeal is at Riom. Le Puy the capital, Brioude and La Chaise-Dieu the principal towns of the department, receive separate treatment. It has some notable churches, of which those of Chamalières, St Paulien and Sainte-Marie-des-Chazes are Romanesque in style; Le Monastier preserves the church, in part Romanesque, and the buildings of the abbey to which it owes its origin. Arlempdes and Bouzols (near Coubon) have the ruins of large feudal châteaus. The rocky plateau overlooking Polignac is occupied by the ruins of the imposing stronghold of the ancient family of Polignac, including a square donjon of the 14th century. Interesting Gallo-Roman remains have been found on the site.

HAUTE-MARNE, a department of north-eastern France, made up for the most part of districts belonging to the former province of Champagne (Bassigny, Perthois, Vallage), with smaller portions of Lorraine and Burgundy, and some fragments of Franche-Comté. Area, 2415 sq. m. Pop. (1906), 221,724. It is bounded N.E. by Meuse, E. by Vosges, S.E. by Haute-Saône, S. and S.W. by Côte d’Or, W. by Aube, and N.W. by Marne. Its greatest elevation (1693 ft.) is in the plateau of Langres in the south between the sources of the Marne and those of the Aube; the watershed between the basin of the Rhone on the south and those of the Seine and Meuse on the north, which is formed by the plateau of Langres continued north-east by the Monts Faucilles, has an average height of 1500 or 1600 ft. The country descends rapidly towards the south, but in very gentle slopes northwards. To the north is Bassigny (the paybas or low country, as distinguished from the highlands), a district characterized by monotonous flats of little fertility and extensive wooded tracts. The lowest level of the department is 361 ft. Hydrographically Haute-Marne belongs for the most part to the basin of the Seine, the remainder to those of the Rhone and the Meuse. The principal river is the Marne, which rises here, and has a course of 75 m. within the department. Among its more important affluents are, on the right the Rognon, and on the left the Blaise. The Saulx, another tributary of the Marne on the right, also rises in Haute-Marne. Westward the department is watered by the Aube and its tributary the Aujon, both of which have their sources on the plateau of Langres. The Meuse also rises in the Monts Faucilles, and has a course of 31 m. within the department. On the Mediterranean side the department sends to the Saône the Apance, the Amance, the Salon and the Vingeanne. The climate is partly that of the Seine region, partly that of the Vosges, and partly that of the Rhone; the mean temperature is 51° F., nearly that of Paris; the rainfall is slightly below the average for France.

The agriculture of the department is carried on chiefly by small proprietors. The chief crops are wheat and oats, which are more than sufficient for the needs of the inhabitants; potatoes, lucerne and mangel-wurzels are next in importance. Natural pasture is abundant, especially in Bassigny, where horse and cattle-raising flourish. The vineyards produce some fair wines, notably the white wine of Soyers. More than a quarter of the territory is under wood. The department is rich in iron and building and other varieties of stone are quarried. The warm springs of Bourbonne-les-Bains are among the earliest known and most frequented in France. The leading industry is the metallurgical; its establishments include blast furnaces, foundries, forges, plate-rolling works, and shops for nailmaking and smith’s work of various descriptions. St Dizier is the chief centre of manufacture and distribution. The cutlery trade occupies thousands of hands at Nogent-en-Bassigny and in the neighbourhood of Langres. Val d’Osne is well known for its production of fountains, statues, &c., in metal-work. Flour-milling, glove-making (at Chaumont), basket-making, brewing, tanning and other industries are also carried on. The principal import is coal, while manufactured goods, iron, stone, wood and cereals are exported. The department is served by the Eastern railway, of which the line from Paris to Belfort passes through Chaumont and Langres. The

canal from the Marne to the Saône and the canal of the Haute-Marne, which accompany the Marne, together cover 99 m.; there is a canal 14 m. long from St Dizier to Wassy. There are three arrondissements (Chaumont, Langres and Wassy), with 28 cantons and 550 communes. Chaumont is the capital. The department forms the diocese of Langres; it belongs to the VII. military region and to the educational circumscription (académie) of Dijon, where also is its court of appeal. The principal towns—Chaumont, Langres, St Dizier and Bourbonne-les-Bains—receive separate notice. At Montier-en-Der the remains of an abbey founded in the 7th century include a fine church with nave and aisles of the 10th, and choir of the 13th century. Wassy, the scene in 1562 of the celebrated massacre of Protestants by the troops of Francis, duke of Guise, has among its old buildings a church much of which dates from the Romanesque period. Vignory has a church of the 11th century. Joinville, a metallurgical centre, preserves a chateau of the dukes of Guise in the Renaissance style. Pailly, near Langres, has a fine chateau of the last half of the 16th century.

HAUTERIVE, ALEXANDRE MAURICE BLANC DE LANAUTTE, Comte d’ (1754-1830), French statesman and diplomatist, was born at Aspres (Hautes-Alpes) on the 14th of April 1754, and was educated at Grenoble, where he became a professor. Later he held a similar position at Tours, and there he attracted the attention of the duc de Choiseul, who invited him to visit him at Chanteloup. Hauterive thus came in contact with the great men who visited the duke, and one of these, the comte de Choiseul-Goiffier, on his appointment as ambassador to Constantinople in 1784 took him with him. Hauterive was enriched for a time by his marriage with a widow, Madame de Marchais, but was ruined by the Revolution. In 1790 he applied for and received the post of consul at New York. Under the Consulate, however, he was accused of embezzlement and recalled; and, though the charge was proved to be false, was not reinstated. In 1798, after trying his hand at farming in America, Hauterive was appointed to a post in the French foreign office. In this capacity he made a sensation by his *L’État de la France à la fin de l’an VIII* (1800), which he had been commissioned by Bonaparte to draw up, as a manifesto to foreign nations, after the *coup d’état* of the 18th Brumaire. This won him the confidence of Bonaparte, and he was henceforth employed in drawing up many of the more important documents. In 1805 he was made a councillor of state and member of the Legion of Honour, and between 1805 and 1813 he was more than once temporarily minister of foreign affairs. He attempted, though vainly, to use his influence to moderate Napoleon’s policy, especially in the matter of Spain and the treatment of the pope. In 1805 a difference of opinion with Talleyrand on the question of the Austrian alliance, which Hauterive favoured, led to his withdrawal from the political side of the ministry of foreign affairs, and he was appointed keeper of the archives of the same department. In this capacity he did very useful work, and after the Restoration continued in this post at the request of the duc de Richelieu, his work being recognized by his election as a member of the Académie des Inscriptions et Belles-Lettres in 1820. He died at Paris on the 28th of July 1830.

There is a detailed account of Hauterive, with considerable extracts from his correspondence with Talleyrand, in the *Biographie universelle* by A. F. Artand de Montor, who published a separate life in 1831. Criticisms of his *État de la France* appeared in Germany and England by F. von Gentz (*Von dem politischen Zustände*, 1801), and by T. B. Clarke (*A Hist. and Pol. View …*, 1803).

HAUTES ALPES, a department in S.E. France, formed in 1790 out of the south-eastern portion of the old province of Dauphiné, together with a small part of N. Provence. It is bounded N. by the department of Savoie, E. by Italy and the department of the Basses Alpes, S. by the last-named department and that of the Drôme, and W. by the departments of the Drôme and of the Isère. Its area is 2178 sq. m., its greatest length is 85 m. and its greatest breadth 62 m. It is very mountainous, and includes the Pointe des Écrins (13,462 ft.), the loftiest summit in France before the annexation of Savoy in 1860, as well as the Meije (13,081 ft.), the Ailefroide (12,989 ft.) and the Mont Pelvoux (12,973 ft.), though Monte Viso (12,609 ft.) is wholly in Italy, rising just over the border. The department is to a large extent made up of the basins of the upper Durance (with its tributaries, the Guisane, the Gyronde and the Guil), of the upper Drac and of the Buëch—all being to a very large extent wild mountain torrents in their upper course. The department is divided into three arrondissements (Gap, Briançon and Embrun), 24 cantons and 186 communes. In 1906 its population was 107,498. It is a very poor department owing to its great elevation above the sea-level. There are no industries of any extent, and its commerce is almost wholly of local importance. The prolonged winter greatly hinders agricultural development, while the pastoral region has been greatly damaged and the forests destroyed by the ravages of the Provençal sheep, vast flocks of which are driven up here in the summer, as the pastures are leased out to a large extent, and but little utilized by the inhabitants. It now forms the diocese of Gap (this see is first certainly mentioned in the 6th century), which is in the ecclesiastical province of Aix en Provence; in 1791 there was annexed to it the archiepiscopal see of Embrun, which was then suppressed. There are 114 m. of railway in the department. This includes the main line from Briançon past Gap towards Grenoble. About 16½ m. W. of Gap is the important railway junction of Veynes, whence branch off the lines to Grenoble, to Valence by Die and Livron, and to Sisteron for Marseilles. The chief town is Gap, while Briançon and Embrun are the only other important places.

See J. Roman, *Dictionnaire topographique du dép. des Htes-Alpes* (Paris, 1884), *Tableau historique du dép. des Htes-Alpes* (Paris, 1887-1890, 2 vols.), and *Répertoire archéologique du dép. des Htes-Alpes*(Paris, 1888); J. C. F. Ladoucette, *Histoire, topographie, &c., des Hautes-Alpes* (3rd ed., Paris, 1848).

(W. A. B. C.)

HAUTE-SAÔNE, a department of eastern France, formed in 1790 from the northern portion of Franche Comté. It is traversed by the river Saône, bounded N. by the department of the Vosges, E. by the territory of Belfort, S. by Doubs and Jura, and W. by Côte-d'Or and Haute-Marne. Pop. (1906), 263,890; area, 2075 sq. m. On the north-east, where they are formed by the Vosges, and to the south along the course of the Ognon the limits are natural. The highest point of the department is the Ballon de Servance (3970 ft.), and the lowest the confluence of the Saône and Ognon (610 ft.). The general slope is from north-east to south-west, the direction followed by those two streams. In the north-east the department belongs to the Vosgian formation, consisting of forest-clad mountains of sandstone and granite, and is of a marshy nature; but throughout the greater part of its extent it is composed of limestone plateaus 800 to 1000 ft. high pierced with crevasses and subterranean caves, into which the rain water disappears to issue again as springs in the valleys 200 ft. lower down. In its passage through the department the Saône receives from the right the Amance and the Salon from the Langres plateau, and from the left the Coney, the Lanterne (augmented by the Breuchin which passes by Luxeuil), the Durgeon (passing Vesoul), and the Ognon. The north-eastern districts are cold and have an annual rainfall ranging from 36 to 48 in. Towards the south-west the climate becomes more temperate. At Vesoul and Gray the rainfall only reaches 24 in. per annum.

Haute-Saône is primarily agricultural. Of its total area nearly half is arable land; wheat, oats, meslin and rye are the chief cereals and potatoes are largely grown. The vine flourishes mainly in the arrondissement of Gray. Apples, plums and cherries (from which the kirsch, for which the department is famous, is distilled) are the chief fruits. The woods which cover a quarter of the department are composed mainly of firs in the Vosges and of oak, beech, hornbeam and aspen in the other districts. The river-valleys furnish good pasture for the rearing of horses and of horned cattle. The department possesses mines of coal (at Ronchamp) and rock-salt (at Gouhenans) and stone quarries are worked. Of the many mineral waters of Haute-Saône the best known are the hot springs of Luxeuil (*q.v.*). Besides iron-working establishments (smelting furnaces, foundries and wire-drawing mills), Haute-Saône possesses copper-foundries, engineering works, steel-foundries and factories at Plancher-les-Mines and elsewhere for producing ironmongery, nails, pins, files, saws, screws, shot, chains, agricultural implements, locks, spinning machinery, edge tools. Window-glass and glass wares, pottery and earthenware are manufactured; there are also brick and tile-works. The spinning and weaving of cotton, of which Héricourt (pop. in 1906, 5194) is the chief centre, stand next in importance to metal working, and there are numerous paper-mills. Print-works, fulling mills, hosiery factories and straw-hat factories are also of some account; as well as sugar works, distilleries, dye-works, saw-mills, starch-works, the chemical works at Gouhenans, oil-mills, tanyards and flour-mills. The department exports wheat, cattle, cheese, butter, iron, wood, pottery, kirschwasser, plaster, leather, glass, &c. The Saône provides a navigable channel of about 70 m., which is connected with the Moselle and the Meuse at Corre by the Canal de l'Est along the valley of the Coney. Gray is the chief emporium of the water-borne trade of the Saône. Haute-Saône is served chiefly by the Eastern railway. There are three arrondissements—Vesoul, Gray, Lure—comprising 28 cantons, 583 communes. Haute-Saône is in the district of the VII. army corps, and in its legal, ecclesiastical and educational relations depends on Besançon.

Vesoul, the capital of the department, Gray and Luxeuil are the principal towns. There is an important school of agriculture at St Rémy in the arrondissement of Vesoul. The Roman ruins and mosaics at Membrey in the arrondissement of Gray and the church (13th and 15th centuries) and abbey buildings at Faverney, in the arrondissement of Vesoul, are of antiquarian interest.

HAUTE-SAVOIE, a frontier department of France, formed in 1860 of the old provinces of the Genevois, the Chablais and the Faucigny, which constituted the northern portion of the duchy of Savoy. It is bounded N. by the canton and Lake of Geneva, E. by the Swiss canton of the Valais, S. by Italy and the department of Savoie, and W. by the department of the Ain. It is mainly made up of the river-basins of the Arve (flowing along the northern foot of the Mont Blanc range, and receiving the Giffre, on the right, and the Borne and Foron, on the left—the Arve joins the Rhone, close to Geneva), of the Dranse (with several branches, all flowing into the Lake of Geneva), of the Usses and of the Fier (both flowing direct into the Rhone, the latter after forming the Lake of Annecy). The upper course of the Arly is also in the department, but the river then leaves it to fall into the Isère. The whole of the department is mountainous. But the hills attain no very great height, save at its south-east end, where rises the snowclad chain of Mont Blanc, with many high peaks (culminating in Mont Blanc, 15,782 ft.) and many glaciers. That portion of the department is alone frequented by travellers, whose centre is Chamonix in the upper Arve valley. The lowest point (945 ft.) in the department is at the junction of the Fier with the Rhone. The whole of the department is included in that portion of the duchy of Savoy which was neutralized in 1815. In 1906 the population of the department was 260,617. Its area is 1775 sq. m., and it is divided into four arrondissements (Annecy, the chief town, Bonneville, St Julien and Thonon), 28 cantons and 314 communes. It forms the diocese of Annecy. There are in the department 176 m. of broad-gauge railways, and 70 m. of narrow-gauge lines. There are also a number of mineral springs, only three of which are known to foreigners—the chalybeate waters of Évian and Amphion, close to each other on the south shore of the Lake of Geneva, and the chalybeate and sulphurous waters of St Gervais, at the north-west end of the chain of Mont Blanc. Anthracite and asphalte mines are numerous, as well as stone quarries. Cotton is manufactured at Annecy, while Cluses is the centre of the clock-making industry. There is a well-known bell foundry at Annecy le Vieux. Thonon (the old capital of the Chablais) is the most important town on the southern shore of the Lake of Geneva and, after Annecy, the most populous place in the department.

(W. A. B. C.)

HAUTES-PYRÉNÉES, a department of south-western France, on the Spanish frontier, formed in 1790, half of it being taken from Bigorre and the remainder from Armagnac, Nébouzan, Astarac and Quatre Vallées, districts

which all belonged to the province of Gascony. Pop. (1906), 209,397. Area, 1750 sq. m. Hautes-Pyrénées is bounded S. by Spain, W. by the department of Basses-Pyrénées (which encloses on its eastern border five communes belonging to Hautes-Pyrénées), N. by Gers and E. by Haute-Garonne. Except on the south its boundaries are conventional. The south of the department, comprising two-thirds of its area, is occupied by the central Pyrénées. Some of the peaks reach or exceed the height of 10,000 ft., the Vignemale (10,820 ft.) being the highest in the French Pyrénées. The imposing *cirques* (Cirques de Troumouse, Gavarnie and Estaubé), with their glaciers and waterfalls, and the pleasant valleys attract a large number of tourists, the most noted point being the Cirque de Gavarnie. The northern portion of the department is a region of plains and undulating hills clothed with cornfields, vineyards and meadows. To the north-east, however, the cold and wind-swept plateau of Lannemezan (about 2000 ft.), the watershed of the streams that come down on the French side of the Pyrenees, presents in its bleakness and barrenness a striking contrast to the plain that lies below. The department is drained by three principal streams, the Gave de Pau, the Adour and the Neste, an affluent of the Garonne. The sources of the first and third lie close together in the Cirque of Gavarnie and on the slopes of Troumouse, whence they flow respectively to the north-west and north-east. An important section of the Pyrenees, which carries the Massif Néouvielle and the Pic du Midi de Bigorre (with its meteorological observatory), runs northward between these two valleys. From the Pic du Midi descends the Adour, which, after watering the pleasant valley of Campan, leaves the mountains at Bagnères and then divides into a multitude of channels, to irrigate the rich plain of Tarbes. The chief of these is the Canal d'Alaric with a length of 36 m. Beyond Hautes-Pyrénées it receives on the right the Arros, which flows through the department from south to north-northwest; on the left it receives the Gave de Pau. This latter stream, rising in Gavarnie, is joined at Luz by the Gave de Bastan from Néouvielle, and at Pierrefitte by the Gave de Cauterets, fed by streams from the Vignemale. The Gave de Pau, after passing Argelès, a well-known centre for excursions, and Lourdes, leaves the mountains and turns sharply from north to west; it has a greater volume of water than the Adour, but, being more of a mountain torrent, is regarded as a tributary of the Adour, which is navigable in the latter part of its course. The Neste d'Aure, descending from the peaks of Néouvielle and Troumouse, receives at Arreau the Neste de Louron from the pass of Clarabide and flows northwards through a beautiful valley as far as La Barthe, where it turns east; it is important as furnishing the plateau of Lannemezan with a canal, the Canal de la Neste, the waters of which are partly used for irrigation and partly for supplying the streams that rise there and are dried up in summer—the Gers and the Baïse, affluents of the Garonne. This latter only touches the department. The climate of Hautes-Pyrénées, though very cold on the highlands, is warm and moist in the plains, where there are hot summers, fine autumns, mild winters and rainy springs. On the plateau of Lannemezan, while the summers are dry and scorching, the winters are very severe. The average annual rainfall at Tarbes, in the north of the department, is about 34 in.; at the higher altitudes it is much greater. The mean annual temperature at Tarbes is 59° Fahr.

Hautes-Pyrénées is agricultural in the plains, pastoral in the highlands. The more important cereals are wheat and maize, which is much used for the feeding of pigs and poultry, especially geese; rye, oats and barley are grown in the mountain districts. The wines of Madiran and Peyriguère are well known and tobacco is also cultivated; chestnut trees and fruit trees are grown on the lower slopes. In the neighbourhood of Tarbes and Bagnères-de-Bigorre horse-breeding is the principal occupation and there is a famous stud at Tarbes. The horse of the region is the result of a fusion of Arab, English and Navarrese blood and is well fitted for saddle and harness; it is largely used by light cavalry regiments. Cattle raising is important; the milch-cows of Lourdes and the oxen of Tarbes and the valley of the Aure are highly esteemed. Sheep and goats are also reared. The forests, which occur chiefly in the highlands, contain bears, boars, wolves and other wild animals. There are at Campan and Sarrancolin quarries of fine marble, which is sawn and worked at Bagnères. There is a group of slate quarries at Labassère. Deposits of lignite, lead, manganese and zinc are found. The mineral springs of Hautes-Pyrénées are numerous and much visited. The principal in the valley of the Gave de Pau are Cauterets (hot springs containing sulphur and sodium), St Sauveur (springs with sulphur and sodium), and Barèges (hot springs with sulphur and sodium), and in the valley of the Adour Bagnères (hot or cold springs containing calcium sulphates, iron, sulphur and sodium) and Capvern near Lannemezan (springs containing calcium sulphates).

The department has flour-mills and saw-mills, a large military arsenal at Tarbes, paper-mills, tanneries and manufactories of agricultural implements and looms. The spinning and weaving of wool and the manufacture of knitted goods are carried on; Bagnères-de-Bigorre is the chief centre of the textile industry.

Of the passes (*ports*) into Spain, even the chief, Gavarnie (7398 ft.), is not accessible to carriages. The department is served by the Southern railway and is traversed from west to east by the main line from Bayonne to Toulouse. There are three arrondissements, those of Tarbes, Argelès and Bagnères-de-Bigorre, 26 cantons and 480 communes. Tarbes is the capital of Hautes-Pyrénées, which constitutes the diocese of Tarbes, and is attached to the appeal court of Pau; it forms part of the region of the XVIII. army corps. In educational matters it falls within the circumscription of the académie of Toulouse. Tarbes, Lourdes, Bagnères-de-Bigorre and Luz-St Sauveur are the principal towns. St Savin, in the valley of the Gave de Pau, and Sarrancolin have interesting Romanesque churches. The church of Maubourguet built by the Templars in the 12th century is also remarkable.

HAUTE-VIENNE, a department of central France, formed in 1790 of Haut-Limousin and of portions of Marche, Poitou and Berry. Pop. (1906), 385,732. Area, 2144 sq. m. It is bounded N. by Indre, E. by Creuse, S.E. by Corrèze, S.W. by Dordogne, W. by Charente and N.W. by Vienne. Haute-Vienne belongs to the central plateau of France, and drains partly to the Loire and partly to the Garonne. The highest altitude (2549 ft.) is in the extreme south-east, and belongs to the treeless but well-watered plateau of Millevaches, formed of granite, gneiss and mica. From that point the department slopes towards the west, south-west and north. To the north-west of the Millevaches are the Ambazac and Blond Hills, both separating the valley of the Vienne from that of the Gartempe, a tributary of the Creuse. The Vienne traverses the department from east to west, passing Eymoutiers, St Léonard, Limoges and St Junien, and receiving on the right the Maude and the Taurion. The Isle, which flows into the Dordogne, with its tributaries the Auvézère and the Dronne, and the Tardoire and the Bandiat, tributaries of the Charente, all rise in the south of the department. The altitude and inland position of Haute-Vienne, its geological character, and the northern exposure of its valleys make the winters long and severe; but the climate

is milder in the west and north-west. The annual rainfall often reaches 36 or 37 in. and even more in the mountains. Haute-Vienne is on the whole unproductive. Rye, wheat, buckwheat and oats are the cereals most grown, but the chestnut, which is a characteristic product of the department, still forms the staple food of large numbers of the population. Potatoes, mangolds, hemp and colza are cultivated. After the chestnut, walnuts and cider-apples are the principal fruits. Good breeds of horned cattle and sheep are reared and find a ready market in Paris. Horses for remount purposes are also raised. The quarries furnish granite and large quantities of kaolin, which is both exported and used in the porcelain works of the department. Amianthus, emeralds and garnets are found. Limoges is the centre of the porcelain industry and has important liqueur distilleries. Woollen goods, starch, paper and pasteboard, wooden and leather shoes, gloves, agricultural implements and hats are other industrial products, and there are flour-mills, breweries, dye-works, tanneries, iron foundries and printing works. Wine and alcohol for the liqueur-manufacture, coal, raw materials for textile industries, hops, skins and various manufactured articles are among the imports.

The department is served almost entirely by the Orléans Railway. It is divided into the arrondissements of Limoges, Bellac, Rochechouart and St Yrieix (29 cantons and 205 communes), and belongs to the académie (educational division) of Poitiers and the ecclesiastical province of Bourges. Limoges, the capital, is the seat of a bishopric and of a court of appeal, and is the headquarters of the XII. army corps. The other principal towns are St Yrieix and St Junien. Solignac, St Léonard and Le Dorat have fine Romanesque churches. The remains of the chateau of Chalusset (S.S.E. of Limoges), the most remarkable feudal ruins in Limousin, and the château of Rochechouart, which dates from the 13th, 15th and 16th centuries, are also of interest.

HAUT-RHIN, before 1871 a department of eastern France, formed in 1790 from the southern portion of Alsace. The name “Haut-Rhin” is sometimes used of the territory of Belfort (*q.v.*).

HAÜY, RENÉ JUST (1743-1822), French mineralogist, commonly styled the Abbé Haüy, from being an honorary canon of Notre Dame, was born at St Just, in the department of Oise, on the 28th of February 1743. His parents were in a humble rank of life, and were only enabled by the kindness of friends to send their son to the college of Navarre and afterwards to that of Lemoine. Becoming one of the teachers at the latter, he began to devote his leisure hours to the study of botany; but an accident directed his attention to another field in natural history. Happening to let fall a specimen of calcareous spar belonging to a friend, he was led by examination of the fragments to make experiments which resulted in the statement of the geometrical law of crystallization associated with his name (see Crystallography). The value of this discovery, the mathematical theory of which is given by Haüy in his *Traité de minéralogie*, was immediately recognized, and when communicated to the Academy, it secured for its author a place in that society. Haüy’s name is also known for the observations he made in pyro-electricity. When the Revolution broke out, he was thrown into prison, and his life was even in danger, when he was saved by the intercession of E. Geoffroy Saint-Hilaire. In 1802, under Napoleon, he became professor of mineralogy at the museum of natural history, but after 1814 he was deprived of his appointments by the government of the Restoration. His latter days were consequently clouded by poverty, but the courage and high moral qualities which had helped him forward in his youth did not desert him in his old age; and he lived cheerful and respected till his death at Paris on the 3rd of June 1822.

The following are his principal works: *Essai d’une théorie sur la structure des cristaux* (1784); *Exposition raisonnée de la théorie de l’électricité et du magnétisme, d’après les principes d’Aepinus* (1787); *De la structure considérée comme caractère distinctif des minéraux* (1793); *Exposition abrégée de la théorie de la structure des cristaux* (1793); *Extrait d’un traité élémentaire de minéralogie* (1797); *Traité de minéralogie* (4 vols., 1801); *Traité élémentaire de physique* (2 vols., 1803, 1806); *Tableau comparatif des résultats de la cristallographie, et de l’analyse chimique relativement à la classification des minéraux* (1809); *Traité des pierres précieuses* (1817); *Traité de cristallographie* (2 vols., 1822). He also contributed papers, of which 100 are enumerated in the Royal Society’s catalogue, to various scientific journals, especially the *Journal de physique* and the *Annals du Muséum d’Histoire Naturelle*.

HAVANA (the name is of aboriginal origin; Span. Habana or, more fully, San Cristóbal de la Habana), the capital of Cuba, the largest city of the West Indies, and one of the principal seats of commerce in the New World, situated on the northern coast of the island in 23° 9′ N. lat. and 82° 22′ W. long. Pop. (1899), 235,981; (1907), 297,159. The city occupies a peninsula to the W. of the harbour, between its waters and those of the sea. Several small streams, of which the Almendares river is the largest, empty into the harbour. The pouch-shaped, landlocked bay is spacious and easy of access. Large merchantmen and men-of-war can come up and unload along at least a considerable part of the water-front. The entrance, which is encumbered by neither bar nor rock, averages about 260 yds. in width and is about 1400 yds. long. Within, the bay breaks up into three distinct arms, Marimalena or Regla Bay, Guanabacoa Bay and the Bay of Atarés. On the left hand of the entrance stands the lofty lighthouse tower of the Morro. The sewage of the city and other impurities were for centuries allowed to pollute the bay, but the extent to which the harbour was thereby filled up has been exaggerated. Though certainly very much smaller than it once was, there is a difference of opinion as to whether the harbour has grown smaller since the end of the 18th century.

From the sea the city presents a picturesque appearance. The Havana side of the bay has a sea-wall and an

excellent drive. The city walls, begun in 1671 and completed about 1740, were almost entirely demolished between 1863 and 1880, only a few insignificant remnants having survived the American military occupation of 1899-1902; but it is still usual to speak of the “intramural” and the “extramural” city. The former, the old city, lying close to the harbour front, has streets as narrow as is consistent with wheel traffic. Obispo (Pi y Margall in the new republican nomenclature), O’Reilly and San Rafael are the finest retail business streets, and the Prado and the Cerro the handsomest residential streets in the city proper. The new city, including the suburbs to the W. overlooking the sea, has been laid out on a somewhat more spacious plan, with isolated dwellings and wide thoroughfares, some planted with trees. Most of the houses, and especially those of the planter aristocracy, are massively built of stone, with large grated windows, flat roofs with heavy parapets and inner courts. As the erection of wooden buildings was illegal long after 1772, it is only in the suburban districts that they are to be seen. The limestone which underlies almost all the island affords excellent building stone. The poorer houses are built of brick with plaster fronts. Three-fourths of all the buildings of the city are of one very high storey; there are but a few dozen buildings as high as four storeys. Under Spanish rule, Havana was reputed to be a city of noises and smells. There was no satisfactory cleaning of the streets or draining of the subsoil, and the harbour was rendered visibly foul by the impurities of the town. A revolution was worked in this respect during the United States military occupation of the city, and the republic continued the work.

Climate.—The general characteristics of the climate of Havana are described in the article Cuba. A temperature as low as 40° F. is extraordinary; and freezing point is only reached on extremely rare occasions, such as during hurricanes or electric storms. The mean annual temperature is about 25.7° C. (78° F.); that of the hottest month is about 28.8° C. (84° F.), and that of the coldest, 21° C. (70° F.). The means of the four seasons are approximately—for December, January, February and successive quarters—23°, 27°, 28° and 26° C. (73.4°, 80.6°, 82.4° and 78.8° F.). The mean relative humidity is between 75 and 80 for all seasons save spring, when it is least and may be from 65 upward. A difference of 30° C. (54° F.) at mid-day in the temperature of two spots close together, one in sun and one in shade, is not unusual. The daily variation of temperature is also considerable. The depressing effect of the heat and humidity is greatly relieved by afternoon breezes from the sea, and the nights are invariably comfortable and generally cool.

Defences.—The principal defences of Havana under Spanish rule, when the city was maintained as a military stronghold of the first rank, were (to use the original and unabbreviated form of the names) the Castillo de San Salvador de la Punta, to the W. of the harbour entrance; the Castillo de Los Tres Reyes del Morro and San Carlos de la Cabaña, to the E.; the Santo Domingo de Atarés, at the head of the western arm of the bay, commanding the city and its vicinity; and the Castillo del Príncipe (1767-1780), situated inland on an eminence to the W. El Morro, as it is popularly called, was first erected in 1590-1640, and La Punta, a much smaller fort, is of the same period; both were reconstructed after the evacuation of the city by the English in 1763, from which time also date the castles of Príncipe, Atarés and the Cabaña. The Cabaña, which alone can accommodate some 6000 men, fronts the bay for a distance of more than 800 yds., and was long supposed, at least by Spaniards, to be the strongest fortress of America. Here is the “laurel ditch” or “dead-line”—commemorated by a handsome bronze relief set in the wall of the fortress—where scores of Cuban patriots were shot. To the E. and W. inland are several small forts. The military establishment of the republic is very small.

Churches.—Of the many old churches in the city, the most noteworthy is the cathedral. The original building was abandoned in 1762. The present one, originally the church of the Jesuits, was erected in 1656-1724. The interior decoration dates largely from the last decade of the 18th century and the first two decades of the 19th. In the wall of the chancel, a medallion and inscription long distinguished the tomb of Columbus, whose remains were removed hither from Santo Domingo in 1796. In 1898 they were taken to Spain. Mention may also be made of the churches of Santo Domingo (begun in 1578), Santa Catalina (1700), San Agustin (1608), Santa Clara (1644), La Merced (1744, with a collection of oil paintings) and San Felipe (1693). Monasteries and nunneries were very numerous until the suppression of the religious orders in 1842, when many became simple churches. Some of the convents were successful in conserving their wealth. The former monastery of the Jesuits, now the Jesuit church of Belén (1704), at the corner of Luz and Compostela Streets, is one of the most elegant and richly ornamented in Cuba.

Public Buildings.—The Palace, which served as a residence for the captains-general during the Spanish rule, is the home of the city government and the residence of the president of the republic. It is a large and handsome stone structure (tinted in white and yellow), and stands on the site of the original parish church, facing the Plaza de Armas from the east. It was erected in 1773-1792 and radically altered in 1835 and 1851. A large municipal gaol (1834-1837), capable of receiving 500 inmates, with barracks for a regiment, is a striking object on the Prado. The Castillo del Príncipe now serves as the state penitentiary. Among other public buildings are the exchange (El Muelle), the custom-house (formerly the church of San Francisco; begun about 1575, rebuilt in 1731-1737), and the Maestranza (*c.* 1723), once the navy yard and the headquarters of the artillery and now the home of the national library. All these are in the old city. Some of the older structures—notably the church of Santo Domingo and the Maestranza—are built of grey limestone. In the old city also are the Plaza Vieja, dating from the middle of the 16th century (with the modern Mercado de Cristina, of 1837—destroyed 1908), the old stronghold La Fuerza, erected by Hernando de Soto in 1538, once the treasury of the flotas and galleons, and residence of the governors, with its old watch-tower (La Vigía); and the Plaza de Armas, with the palace, the Senate building, a statue of Fernando VII. (1833), and a commemorative chapel (El Templete, 1828) to mark the supposed spot where mass was first said at the establishment of the city. Mention must be made of the large and interesting markets, especially those of Colón and Tacón. Of the theatres, which until the end of the Spanish period had to compete with the bull-ring and the cockpit, the most important is the Tacón (now “Nacional”) erected in 1838.

Havana is famous for its promenades, drives and public gardens. On the city’s E. harbour front runs the Paseo (Alameda) de Paula (1772-1775, improved 1844-1845), an embanked drive, continued by the Paseo de Rocali and the Cortina de Valdes, with fine views of the forts and the harbour. On the N., along the sea, beginning at the Punta fortress and running W. for several miles along the sea-wall, is a speedway and pleasure-drive, known—from the wall—as the Malecón. Beginning at the Punta fortress—where a park was laid out in 1899 in the place of an ugly quarter, with a memorial to the students judicially murdered by the Spanish volunteers in 1871—and running along the line of the former city walls, past the Parque Central, through the Parque de Isabel II. and the Parque de la India (these two names are now practically abandoned) to the Parque de Colón or Campo de Marte, is the Prado,[1] a wide and handsome promenade and drive, shaded with laurels and lined with fine houses and clubs. In 1907 a hurricane destroyed the greater part of the laurels of the Prado and the royal palms of the Parque de Colón. Central Park is surrounded by hotels, theatres, cafés and clubs, the last including the Centro Asturiano and Casino Español. In the centre is a monument to José Martí (1853-1895), “the apostle of independence,” and in

an adjoining square is the city's fine monument to the Cuban engineer Francisco de Albear, to whom she owes her water system. From the Parque de Colón the Calle (or Calzada) de la Reina—an ordinary business street, once a promenade and known as the Alameda de Isabel II.—with its continuations, the Paseo de Carlos III. and Paseo de Tacón, runs westward through the city past the botanical gardens and the Quinta de los Molinos to the citadel of El Príncipe (1774-1794). A statue of Charles III. by Canova (1803), fountains, pavilions and four rows of trees adorn the Paseo de Carlos III. The gardens of Los Molinos, where the captains-general formerly maintained their summer residence, and the adjoining botanical gardens of the university, contain beautiful avenues of palm trees. Near El Príncipe is the Columbus cemetery, with a fine gateway, a handsome monument (1888) to the students shot in 1871, and another (1897; 75 ft. high) to the firemen lost in a great fire in 1890, besides many smaller memorials. The Calzada de la Infanta is a fine street at the W. end of the new city; the Cerro, in the S.W., is lined with massive residences, once the homes of Cuban aristocracy.

Suburbs.—In the coral rock of the coast sea-baths are excavated, so that bathers may run no risk from sharks. On the S. and W. the city is backed by an amphitheatre of hills, which are crowned in the W. by the conspicuous fortifications of Castillo del Príncipe. On the lower heights near the city lie Vedado, Jesus del Monte, Luyano and other healthy suburbs. Chorrera, Puentes Grandes, Marianao (founded 1830; pop. 1907, 9332) and Guanabacoa (with mineral springs), are attractive places of resort. Regla, just across the bay (now part of the *municipio*), has large business interests.

Charities and Education.—Among the numerous charitable institutions the most important hospital is the Casa de Beneficencia y Maternidad (Charity and Maternity Asylum), opened in 1794, and containing an orphan asylum, a maternity ward, a home for vagrants, a lunatic asylum and an infirmary. There is also in the city an immense lazaretto for lepers. The Centro Asturiano, a club with a membership of some ten or fifteen thousand (not limited to Asturians), maintains for the benefit of its members a large and well-managed sanatorium in spacious grounds in the midst of the city.

Of the schools of the city the most noteworthy is the university (581 regular students, 1907), founded in 1728. Its quarters were in the old convent of Santo Domingo until 1900, when the American military government prepared better quarters for it in the former Pirotecnica Militar, near El Príncipe. There are various laboratories in the city. Other schools are the provincial Institute of Secondary Education (490 regular students in 1907; library of 12,863 vols.), a provincial school of arts and trades (opened 1882), a theological seminary, a boys' technical school, a school of painting and sculpture, a conservatory of music, normal school, mercantile school and a military academy. The Jesuit church (Belén) has a large college for boys, laboratories, an observatory, a museum of natural history, and an historical library. Great progress has been made in education, which was extremely backward until after the end of Spanish rule. The Sociedad Economica de Amigos del Pais, established in 1792, has always had considerable influence. It has a library of some 42,000 volumes, rich in material for Cuban history. Among other similar organizations are an Academy of Medical, Physical and Natural Sciences (1863); a national library, established in 1901, and having in 1908 about 40,000 volumes, including the finest collection in the world of materials for Cuban history; an anthropological society; various medical societies; and a Bar association. An association of sugar planters is a very important factor in the economic development of the island.

Of the newspapers of Havana the most notable is the *El Diario de la Marina* (established in 1838; under its present name, 1844; morning and evening), which was almost from its foundation an official organ of the Spanish government, and generally the mouthpiece of the most intransigent peninsular opinion in all that concerned the politics of the island. *El Ansador Comercial* (1868; evening) is devoted almost exclusively to commercial and financial news. Of the other newspapers the leading ones in 1909 were *La Discusion* (1888; evening), *La Luchu* (1884; evening) and *El Mundo* (1902; morning).

Trade.—Havana commands the wholesale trade of all the western half of the island, and is the centre of commercial and banking interests. Its foreign trade in the five calendar years 1902-1906 (average imports $57,201,276; exports, $40,563,637) amounted to 68.9% of the imports and 44.6% of the exports of the island. The average number of vessels entering the port annually in the ten years from 1864 to 1873 was 1981 (771,196 tons), and the average entries in the five years 1902-1906 were 3698 of 3,904,906 gross tons (coast trade alone, 2162 of 333,795 tons).

In spite of high tariffs and civil wars, and the competition of Matanzas, Cárdenas, Cienfuegos and other Cuban ports opened to foreign trade in modern times, the commerce of Havana has steadily increased. The chief foreign customers are Great Britain and the United States. The two staple articles of export are sugar and tobacco-wares. Other exports of importance are rum, wax and honey; and of less primary importance, fruits, fine cabinet woods, oils and starch. The leading imports are grains, flour, lard and various other foodstuffs, coal, lumber, petroleum and machinery, all mainly from the United States; wines and olive oil from Spain; jerked beef from South America; fabrics and other staples from varied sources. Rice is a principal food of the people; it was formerly taken from the East Indies, but is now mostly raised in the island.

The chief manufacturing industry of Havana is that of tobacco. Of the cigar factories, some of which are in former public and private palaces, more than a hundred may be reckoned as of the first class. Besides the making of boxes and barrels and other articles necessarily involved in its sugar and tobacco trade, Havana also, to some extent, builds carriages and small ships, and manufactures iron and machinery; but the weight of taxation during the Spanish period was always a heavy deterrent on the development of any business requiring great capital. There are minor manufacturing interests in tanneries, and in the manufacture of sweetmeats, malt and distilled liquors, especially rum, besides soaps, candles, starch, perfume, &c. There is one large and complete petroleum refinery (1905).

Havana has frequent steam-boat communication with New York, Baltimore, Philadelphia, Tampa, Mobile, New Orleans and other ports of the United States; and about as frequent with several ports in England, Spain and France. It is the starting-point of a railway system which reaches the six provincial capitals between Pinar del Rio and Santiago, Cárdenas, Cienfuegos and other ports. Telegraphs radiate to all parts of the island; a submarine cable to Key West forms part of the line of communication between Colon and New York, and by other cables the island has connexion with various parts of the West Indies and with South America.

Population and Health.—The population of Havana was reported as 51,307 in 1791; 96,304 in 1811; 94,023 in 1817; 184,508 in 1841. In 1899 the American census showed 235,981, of whom about 25% were foreign (20% Spanish); and the census of 1907 showed 297,159 (not including the attached country districts) and 302,526 (including these country districts), the last being for the "municipio" of Havana. The industrial population is very densely crowded. Owing to this, as well as to the entire lack of proper sanitary customs among the people, the horrible condition of sewerage and the prevalence of yellow fever (first brought to Havana, it is thought, in 1761,

from Vera Cruz), the reputation of the city as regards health was long very bad. The practical extermination of yellow fever during the U.S. military occupation following 1899 was a remarkable achievement. In 1895-1899, owing to the war, there were few non-immune persons in the city, and there was no trouble with the fever, but from the autumn of 1899 a heavy immigration from Spain began, and a fever epidemic was raging in 1900. The American military authorities found that the most extraordinary measures for cleansing the city—involving repeated house-to-house inspection, enforced cleanliness, improved drainage and sewerage, the destruction of various public buildings, and thorough cleansing of the streets—although decidedly effective in reducing the general death-rate of the city (average, 1890-1899, 45.83; 1900, 24.40; 1901, 22.11; 1902, 20.63; general death-rate of U.S. soldiers in 1898, 67.94; in 1901-1902, 7.00), apparently did not affect yellow fever at all. In 1900-1901 Major Walter Reed (1851-1902), a surgeon in the United States army, proved by experiments on voluntary human subjects that the infection was spread by the *Stegomyia* mosquito,[2] and the prevention of the disease was then undertaken by Major William C. Gorgas—all patients being screened and mosquitoes practically exterminated.[3] The number of subsequent deaths from yellow fever has depended solely on the degree to which the necessary precautionary measures were taken.

The entire administrative system of the island, when a Spanish colony, was centred at Havana. Under the republic this remains the capital and the residence of the president, the supreme court, Congress when in session and the chief administrative officers. None of the public services was good in the Spanish period, except the water-supply, which was excellent. The water is derived from the Vento springs, 9 m. from Havana, and is conducted through aqueducts constructed between 1859 and 1894 at a cost of some $5,000,000. About 40,000,000 gallons are supplied daily. The system is owned by the municipality. The older Fernando VII. aqueduct (1831-1835) is still usable in case of need; its supply was the Almendares river (until long after the construction of this, a still older aqueduct, opened at the end of the 16th century, was in use). The sewerage system and conditions of house sanitation were found extremely inadequate when the American army occupied the city in 1899. Several public buildings were so foul that they were demolished and burned. The improvement since the end of Spanish rule has been steady.

History.—Havana, originally founded by Diego Velasquez in 1514 on an unhealthy site near the present Batabanó (pop. in 1907, 15,435, including attached country districts), on the south coast, was soon removed to its present position, was granted an ayuntamiento (town council), and shortly came to be considered one of the most important places in the New World. Its commanding position gained it in 1634, by royal decree, the title of “Llave del Nuevo Mundo y Antemural de las Indias Occidentales” (Key of the New World and Bulwark of the West Indies), in reference to which it bears on its coat of arms a symbolic key and representations of the Morro, Punta and Fuerza. In the history of the place in the 16th century few things stand out except the investments by buccaneers: in 1537 it was sacked and burned, and in 1555 plundered by French buccaneers, and in 1586 it was threatened by Drake. In 1589 Philip II. of Spain ordered the erection of the Punta and the Morro. In the same year the residence of the governor of the island was moved from Santiago de Cuba to Havana. Philip II. granted Havana the title of “ciudad” in 1592. Sugar plantations in the environs appeared before the end of the 16th century. The population of the city, probably about 3000 at the beginning of the 17th century, was doubled in the years following 1655 by the coming of Spaniards from Jamaica. In the course of the 17th century the port became the great rendezvous for the royal merchant and treasure fleets that monopolized trade with America, and the commercial centre of the Spanish-American possessions. It was blockaded four times by the Dutch (who were continually molesting the treasure fleets) in the first half of the 17th century. In 1671 the city walls were begun; they were completed in 1702. The European wars of the 17th and 18th centuries were marked by various incidents in local history. After the end of the Spanish War of Succession (1713) came a period of comparative prosperity in slave-trading and general commerce. The creation in 1740 of a monopolistic trading-company was an event of importance in the history of the island. English squadrons threatened the city several times in the first half of the 18th century, but it was not until 1762 that an investment, made by Admiral Sir George Pocock and the earl of Albemarle, was successful. The siege lasted from June to August and was attended by heavy loss to both besiegers and besieged. The British commanders wrung great sums from the church and the city as prize of war and price of good order. By the treaty of the 10th of February 1763, at the close of the Seven Years’ War, Havana was restored to Spain in exchange for the Floridas. The English turned over the control of the city on the 6th of July. Their occupation greatly stimulated commerce, and from it dates the modern history of the city and of the island (see Cuba). The gradual removal of obstacles from the commerce of the island from 1766 to 1818 particularly benefited Havana. At the end of the 18th century the city was one of the seven or eight great commercial centres of the world, and in the first quarter of the 19th century was a rival in population and in trade of Rio Janeiro, Buenos Aires and New York. In 1789 a bishopric was created at Havana suffragan to the archbishopric at Santiago. From the end of the 18th century Havana, as the centre of government, was the centre of movement and interest. During the administration of Miguel Tacón Havana was improved by many important public works; his name is frequent in the nomenclature of the city. The railway from Havana to Güines was built between 1835 and 1838. Fifty Americans under Lieut. Crittenden, members of the Bahia Honda filibustering expedition of Narciso Lopez, were shot at Fort Atarés in 1851. Like the rest of Cuba, Havana has frequently suffered severely from hurricanes, the most violent being those of 1768 (St Theresa’s), 1810 and 1846. The destruction of the U.S. battleship “Maine” in the harbour of Havana on the 15th of February 1898 was an influential factor in causing the outbreak of the Spanish-American War, and during the war the city was blockaded by a United States fleet.

See J. de la Pezuela, *Diccionario de la Isla de Cuba*, vol. iii. (Madrid, 1863), for minute details of history, administration and economic conditions down to 1862; J. M. de la Torre, *Lo que fuimos y lo que somos, ó la Habana antigua y moderna* (Habana, 1857); P.J. Guitéras, *Historia de la conquista de la Habana 1762* (Philadelphia, 1856); J. de la Pezuela, *Sitio y rendicion de la Habana en 1762* (Madrid, 1859); A. Bachiller y Morales, *Monografía historica* (Habana, 1883), minutely covering the English occupation (the best account) of 1762-1763; Maria de los Mercedes, comtesse de Merlin, *La Havana* (3 vols., Paris, 1844); and the works cited under Cuba.

1 Renamed Paseo de Marti by the republic, but the name is never used.

2 Dr Carlos Finlay of Havana, arguing from the coincidence between the climatic limitation of yellow fever and the geographical limitation of the mosquito, urged (1881 sqq.) that there was some relation between the disease and the insect. Reed worked from the observation of Dr H. R. Carter (U.S. Marine Hospital Service) that although the incubation of the disease was 5 days, 15 to 20 days had to elapse before the “infection” of the house, and from Ross’s demonstration of the part played in malaria by the *Anopheles*. See H. A. Kelly, *Walter Reed and Yellow Fever* (New York, 1907).

3 The average number of deaths from yellow fever annually from 1885 (when reliable registration began) to 1898 was 455; maximum 1282 in 1896 (supposed average for 4 years, 1856-1859, being 1489.8 and for 7 years, 1873-1879, 1395.1), minimum 136, in 1898; average deaths of military, 1885-1898, 278.4 (in 1896-1897 constituting 1966 out of a total of 2140); deaths of American soldiers, 1899-1900, 18 out of 431.

HAVANT, a market-town in the Fareham parliamentary division of Hampshire, England, 67 m. S.W. from London by the London & South Western and the London, Brighton & South Coast railways. Pop. of urban district (1901), 3837. The urban district of Warblington, 1 m. S.E. (pop. 3639), has a fine church, Norman and later, with traces of pre-Norman work, and some remains of a Tudor castle. Havant lies in a flat coastal district, near the head of Langstone Harbour, a wide shallow inlet of the English Channel. The church of St Faith was largely rebuilt in 1875, but retains some good Early English work. There are breweries and tanneries, and the manufacture of parchment is carried on. Off the mainland near Havant lies Hayling, a flat island of irregular form lying between the harbours of Langstone and Chichester. It measures 4 m. in length from N. to S., and is nearly the same in breadth at the south, but the breadth generally is about 1½ m. It is well wooded and fertile. A railway serves the village of South Hayling, which is in some favour as a seaside resort, having a wide sandy beach and good golf links. The island was in the possession of successive religious bodies from the Conquest (when it was given to the Benedictines of Jumièges, near Rouen), until the Dissolution. The church of South Hayling is a fine Early English building.

HAVEL, a river of Prussia, Germany, having its origin in Lake Dambeck (223 ft.) on the Mecklenburg plateau, a few miles north-west of Neu-Strelitz, and after threading several lakes flowing south as far as Spandau. Thence it curves south-west, past Potsdam and Brandenburg, traversing another chain of lakes, and finally continues north-west until it joins the Elbe from the right some miles above Wittenberge after a total course of 221 m. and a total fall of only 158 ft. Its banks are mostly marshy or sandy, and the stream is navigable from the Mecklenburg lakes downwards. Several canals connect it with these lakes, as well as with other rivers—*e.g.* the Finow canal with the Oder, the Ruppin canal with the Rhin, the Berlin-Spandau navigable canal (5½ m.) with the Spree, and the Plaue-Ihle canal with the Elbe. The Sakrow-Paretz canal, 11 m. long, cuts off the deep bend at Potsdam. The most notable of the tributaries is the Spree (227 m. long), which bisects Berlin and joins the Havel at Spandau. Area of river basin, 10,159 sq. m.

HAVELBERG, a town of Germany, in the Prussian province of Brandenburg, on the Havel and the railway Glöwen-Havelberg. Pop. (1905), 5988. The town is built partly on an island in the Havel, and partly on hills on the right bank of the river, on one of which stands the fine Romanesque cathedral dating from the 12th century. The two parts, which are connected by a bridge, were incorporated as one town in 1875. The inhabitants are chiefly engaged in tobacco manufacturing, sugar-refining and boat-building, and in the timber trade.

Otto I. founded a bishopric at Havelberg in 946; the bishop, however, who was a prince of the Empire, generally resided at Plattenburg, or Wittstock, a few miles to the north. In 1548 the bishopric was seized by the elector of Brandenburg, who finally took possession of it fifty years later, and the cathedral passed to the Protestant Church, retaining its endowments till the edict of 1810, by which all former ecclesiastical possessions were assumed by the crown. The final secularization was delayed till 1819. Havelberg was formerly a strong fortress, but in the Thirty Years' War it was taken from the Danish by the imperial troops in 1627. Recaptured by the Swedes in 1631, and again in 1635 and 1636, it was in 1637 retaken by the Saxons. It suffered severely from a conflagration in 1870.

HAVELOCK, SIR HENRY (1795-1857), British soldier, one of the heroes of the Indian Mutiny, the second of four brothers (all of whom entered the army), was born at Ford Hall, Bishop-Wearmouth, Sunderland, on the 5th of April 1795. His parents were William Havelock, a wealthy shipbuilder in Sunderland, and Jane, daughter of John Carter, solicitor at Stockton-on-Tees. When about five years old Henry accompanied his elder brother William to Mr Bradley's school at Swanscombe, whence at the age of ten he removed for seven years to Charterhouse school. In accordance with the desire of his mother, who had died in 1811, he entered the Middle Temple in 1813, studying under Chitty the eminent special pleader. His legal studies having been abridged by a misunderstanding with his father, he in 1815 accepted a second lieutenancy in the Rifle Brigade (95th), procured for him by the interest of his brother William. During the following eight years of service in Britain he read extensively and acquired a good acquaintance with the theory of war. In 1823, having exchanged into the 21st and thence into the 13th Light Infantry, he followed his brothers William and Charles to India, first qualifying himself in Hindustani under Dr Gilchrist, a celebrated Orientalist.

At the close of twenty-three years' service he was still a lieutenant, and it was not until 1838 that, after three years' adjutancy of his regiment, he became captain. Before this, however, he had held several staff

appointments, notably that of deputy assistant-adjutant-general of the forces in Burma till the peace of Yandabu, of which he, with Lumsden and Knox, procured the ratifications at Ava from the “Golden Foot,” who bestowed on him the “gold leaf” insignia of Burmese nobility. His first command had been at a stockade capture in the war, and he was present also at the battles of Napadee, Patanago and Pagan. He had also held during his lieutenancy various interpreterships and the adjutancy of the king’s troops at Chinsura. In 1828 he published at Serampore Campaigns in Ava, and in 1829 he married Hannah Shepherd, daughter of Dr Marshman, the eminent missionary. About the same time he became a Baptist, being baptized by Mr John Mack at Serampore. During the first Afghan war he was present as aide-de-camp to Sir Willoughby Cotton at the capture of Ghazni, on the 23rd of July 1839, and at the occupation of Kabul. After a short absence in Bengal to secure the publication of his *Memoirs of the Afghan Campaign*, he returned to Kabul in charge of recruits, and became interpreter to General Elphinstone. In 1840, being attached to Sir Robert Sale’s force, he took part in the Khurd-Kabul fight, in the celebrated passage of the defiles of the Ghilzais (1841) and in the fighting from Tezeen to Jalalabad. Here, after many months’ siege, his column in a sortie *en masse* defeated Akbar Khan on the 7th of April 1842. He was now made deputy adjutant-general of the infantry division in Kabul, and in September he assisted at Jagdalak, at Tezeen, and at the release of the British prisoners at Kabul, besides taking a prominent part at Istaliff. Having obtained a regimental majority he next went through the Mahratta campaign as Persian interpreter to Sir Hugh (Viscount) Gough, and distinguished himself at Maharajpore in 1843, and also in the Sikh campaign at Moodkee, Ferozeshah and Sobraon in 1845. For these services he was made deputy adjutant-general at Bombay. He exchanged from the 13th to the 39th, then as second major into the 53rd at the beginning of 1849, and soon afterwards left for England, where he spent two years. In 1854 he became quartermaster-general, then full colonel, and lastly adjutant-general of the troops in India.

In 1857 he was selected by Sir James Outram for the command of a division in the Persian campaign, during which he was present at the actions of Muhamra and Ahwaz. Peace with Persia set him free just as the Mutiny broke out; and he was chosen to command a column “to quell disturbances in Allahabad, to support Lawrence at Lucknow and Wheeler at Cawnpore, to disperse and utterly destroy all mutineers and insurgents.” At this time Lady Canning wrote of him in her diary: “General Havelock is not in fashion, but all the same we believe that he will do well. No doubt he is fussy and tiresome, but his little old stiff figure looks as active and fit for use as if he were made of steel.” But in spite of this lukewarm commendation Havelock proved himself the man for the occasion, and won the reputation of a great military leader. At Fatehpur, on the 12th of July, at Aong and Pandoobridge on the 15th, at Cawnpore on the 16th, at Unao on the 29th, at Busherutgunge on the 29th and again on the 5th of August, at Boorhya on the 12th of August, and at Bithur on the 16th, he defeated overwhelming forces. Twice he advanced for the relief of Lucknow, but twice prudence forbade a reckless exposure of troops wasted by battle and disease in the almost impracticable task. Reinforcements arriving at last under Outram, he was enabled by the generosity of his superior officer to crown his successes on the 25th of September 1857 by the capture of Lucknow. There he died on the 24th of November 1857, of dysentery, brought on by the anxieties and fatigues connected with his victorious march and with the subsequent blockade of the British troops. He lived long enough to receive the intelligence that he had been created K.C.B. for the first three battles of the campaign; but of the major-generalship which was shortly afterwards conferred he never knew. On the 26th of November, before tidings of his death had reached England, letters-patent were directed to create him a baronet and a pension of £1000 a year was voted at the assembling of parliament. The baronetcy was afterwards bestowed upon his eldest son; while to his widow, by royal order, was given the rank to which she would have been entitled had her husband survived and been created a baronet. To both widow and son pensions of £1000 were awarded by parliament.

See Marshman, *Life of Havelock* (1860); L. J. Trotter, *The Bayard of India* (1903); F. M. Holmes, *Four Heroes of India*; G. B. Smith, *Heroes of the Nineteenth Century* (1901); and A. Forbes, *Havelock* (“English Men of Action” series, 1890).

HAVELOK THE DANE, an Anglo-Danish romance. The hero, under the name of Cuheran or Cuaran, was a scullion-jongleur at the court of Edelsi (Alsi) or Godric, king of Lincoln and Lindsey. At the same court was brought up Argentille or Goldborough, the orphan daughter of Adelbrict, the Danish king of Norfolk, and his wife Orwain, Edelsi’s sister; and Edelsi, to humiliate his ward, married her to the scullion Cuaran. But, inspired by a vision, Cuaran and Goldborough set out for Grimsby, where Cuaran learned that Grim, his supposed father, was dead. His foster-sister, moreover, told him that his real name was Havelok, that he was the son of Gunter (or Birkabeyn), king of Denmark, and had been rescued by Grim, who though a poor fisherman was a noble in his own country, when Gunter perished by treason. The hero then wins back his own and Goldborough’s kingdoms, punishing traitors and rewarding the faithful. The story exists in two French versions: as an interpolation between Geffrei Gaimar’s *Brut* and his *Estorie des Engles* (*c.* 1150) and in the Anglo-Norman *Lai d’Havelok* (12th century). The English *Havelok* (*c.* 1300) is written in a Lincolnshire dialect and embodies abundant local tradition. A short version of the tale is interpolated in the Lambeth MS. of Robert Mannyng’s *Handlyng Synne*. The story reappears more than once in English literature, notably in the ballad of “Argentille and Curan” in William Warner’s *Albion’s England*. The name of Havelok (Habloc, Abloec, Abloyc) is said to correspond in Welsh to Anlaf or Olaf. Now the historical Anlaf Curan was the son of a Viking chief Sihtric, who was king of Northumbria in 925 and died in 927. Anlaf Sihtricson was driven into exile by his stepmother’s brother Æthelstan, and took refuge in Scotland at the court of Constantine II., whose daughter he married. He was defeated with Constantine[1] at Brunanburh (937), but was nevertheless for two short periods joint ruler in Northumbria with his cousin Anlaf Godfreyson. He reigned in Dublin till 980, when he was defeated. He died the next year as a monk at Iona. Round the name of Anlaf Curan a number of legends rapidly gathered, and the legend of the Danish hero probably filtered through Celtic channels, as the Welsh names of Argentille and Orwain indicate. The close similarity between the Havelok saga and the story of Hamlet (Amlethus) as told by Saxo Grammaticus was pointed out long ago by Scandinavian scholars. The individual points they have in common are found in other legends, but the series of coincidences between the adventurous history of Anlaf Curan and the life of Amlethus can hardly be fortuitous. Interesting light is thrown on the whole question by Professor I. Gollancz (*Hamlet in Iceland*, 1898) by the identification of Amhlaide—who is said by Queen Gormflaith[2] in the *Annals of Ireland by the Four Masters* to have slain Niall

Glundubh—with Anlaf's father Sihtric. The exploits of father and son were likely to be confused.

The mythical elements in the Havelok story are numerous. Argentille, as H. L. Ward points out, is a disguised Valkyrie. Like Svava she inspired a dull and nameless youth, and as Hild raised the dead to fight by magic, so Argentille in *Havelok* and Hermuthruda in *Amleth* prop up dead or wounded men with stakes to bluff the enemy. Havelok's royal lineage is betrayed by his flame breath when he is asleep, a phenomenon which has parallels in the history of Servius Tullius and of Dietrich of Bern. Part of the Havelok legend lingers in local tradition. Havelok destroyed his enemies in Denmark by casting down great stones upon them from the top of a tower, and Grim is said to have kicked three of the turrets from the church tower in his efforts to destroy the enemy's ships. John Weever (*Antient Funerall Monuments*, 1631, p. 749) says that the privilege of the town in Elsinore, where its merchants were free from toll, was due to the interest of Havelok, the Danish prince, and the common seal of the town of Grimsby represents Grim, with "Habloc" on his right hand and Goldeburgh on his left.

The English MS. of *Havelok* (MSS. Laud Misc. 108) in the Bodleian library is unique. It was edited for the Roxburghe Club by Sir F. Madden in 1828. This edition contains, besides the English text, the two French versions. There are subsequent editions by W. W. Skeat (1868) for the E.E. Text Society, by F. Holthausen (London, New York and Heidelberg, 1901), and by W. W. Skeat (Clarendon Press, Oxford, 1902, where further bibliographical references will be found); and a modern English version by Miss E. Hickey (London, 1902). Gaimar's text and the French lai are edited by Sir T. D. Hardy and C. F. Martin in *Rerum Brit. med. aev. scriptores*, vol. i. (1888). See also the account of the saga by H. L. Ward (*Cat. of Romances*, i. 423-446); for the identification of Havelok with Anlaf Curan see G. Storm, *Englische Studien* (1880), iii. 533, a reprint of an earlier article; E. K. Putnam, *The Lambeth Version of Havelok* (Baltimore, 1900).

1 H. L. Ward (*Cat. of Romances*, i. 426) suggests that it was the mention of Constantine in the Havelock legend which led Gaimar to place the tale in the 6th century in the days of the Constantine who succeeded King Arthur. Gaimar voices more than once an Anglo-Danish legend of a Danish dynasty in Britain anterior to the Saxon invasion.

2 A different person from the second wife of Anlaf Curan, also Gormflaith, who forms another link with Amlethus, as she was a woman of the Hermuthruda type and married her husband's conqueror.

HAVERFORDWEST (Welsh *Hwlfordd*, the English name being perhaps a corruption of the Scandinavian *Hafna-Fjord*), the chief town of Pembrokeshire, S. Wales, a contributory parliamentary and municipal borough, and a county of itself with its own lord-lieutenant. Pop. (1901), 6007. It is picturesquely situated on the slopes overlooking the West Cleddau river, which is here crossed by two stone bridges. It has a station on the Great Western Railway on the east side of the river, and when viewed from this point the town presents an imposing appearance with its castle-keep and its many ancient buildings. The river is tidal and navigable for vessels of not more than 150 tons. Coal, cattle, butter and grain are exported, but the commercial importance of the place has greatly declined, as the many ruined warehouses near the river plainly testify. The old walls and fortifications have almost disappeared, but Haverfordwest is still rich in memorials of its past greatness. The huge castle-keep, which dominates the town, was probably built by Gilbert de Clare, early in the 12th century; formerly used as the county gaol, it now serves as the police-station. The large church of St Mary, at the top cf the steep High Street, has fine clerestory windows, clustered columns and an elaborate carved-oak ceiling of the 15th century; it contains several interesting monuments of the 17th and 18th centuries, some of which commemorate members of the family of Philipps of Picton Castle. At the N. corner of the adjacent churchyard stands an ancient building with a vaulted roof, once the record office, but now used as a fish-market. St Martin's, with a low tower and spire, close to the castle, is probably the oldest church in the town, but has been much modernized. Near St Thomas's church on the Green stands an old Moravian chapel which is closely associated with the great scholar and divine, Bishop John Gambold (1711-1771). In a meadow on the W. bank of the river are the considerable remains of the Augustinian Priory of St Mary and St Thomas, built by Robert de Hwlfordd, lord of Haverford, about the year 1200. On the E. bank are the suburbs of Cartlet and Prendergast, the latter of which contains the ancient parish church of St David and the ruins of a large mansion originally built by Maurice de Prendergast (12th century) and subsequently the seat of the Stepney family. A little to the S. of the town are the remains of Haroldstone, once the residence of the powerful Perrot family. The charities belonging to the town, which include John Perrot's bequest (1579), yielding about £350 annually for the improvement of the town, and Tasker's charity school (1684), are very considerable.

Haverfordwest owes its origin to the advent of the Flemings, who were permitted by Henry I. to settle in the hundred of Roose, or Rhôs, in the years 1106-1108, in 1111, and again in 1156. English is exclusively spoken in the town and district, and its inhabitants exhibit their foreign extraction by their language, customs and appearance. Haverfordwest is, in fact, the capital of that English-speaking portion of Pembrokeshire, which has been nicknamed "Little England beyond Wales." This new settlement of intruding foreigners had naturally to be protected against the infuriated natives, and the castle was accordingly built *c.* 1113 by Gilbert de Clare, first earl of Pembroke, who subsequently conferred the seignory of Haverford on his castellan, Richard Fitz-Tancred. On the death of Robert de Hwlfordd, the benefactor and perhaps founder of the priory of St Mary and St Thomas, in 1213, the lordship of the castle reverted to the Crown, and was purchased for 1000 marks from King John by William Marshal, earl of Pembroke, who gave various privileges to the town. Of the numerous charters the earliest known (through an allusion found in a document of Bishop Houghton of St Davids, c. 1370) is one from Henry II., who therein confirms all former rights granted by his grandfather, Henry I. John in 1207 gave certain rights to the town concerning the Port of Milford, while William Marshal II., earl of Pembroke, presented it with three charters, the earliest of which is dated 1219. An important charter of Edward V., as prince of Wales and lord of Haverford, enacted that the town should be incorporated under a mayor, two sheriffs and two bailiffs, duly chosen by the burgesses. In 1536, under Henry VIII., Haverfordwest was declared a town and county of itself and was further empowered to send a representative burgess to parliament.

The town long played a prominent part in South Welsh history. In 1220 Llewelyn ap Iorwerth, prince of North Wales, during the absence of William Marshal II., earl of Pembroke, attacked and burnt the suburbs, but failed to reduce the castle by assault. Several of the Plantagenet kings visited the town, including Richard II., who stopped

here some time on his return from Ireland in 1299, and is said to have performed here his last regal act—the confirmation of the grant of a burgage to the Friars Preachers. Oliver Cromwell spent some days here on his way to Ireland, and his original warrant to the mayor and council for the demolition of the castle is still preserved in the council chamber. The prosperity and local importance of Haverfordwest continued unimpaired throughout the 17th and 18th centuries, and Richard Fenton, the historian of Pembrokeshire, describes it in 1810, as “the largest town in the county, if not in all Wales.” With the rise of Milford, however, the shipping trade greatly declined, and Haverfordwest has now the appearance of a quiet country town.

HAVERGAL, FRANCES RIDLEY (1836-1879), English hymn-writer, daughter of the Rev. William Henry Havergal, was born at Astley, Worcestershire, on the 14th of December 1836. At the age of seven she began to write verse, most of it of a religious character. As a hymn-writer she was particularly successful, and the modern English Church collections include several of her compositions. Her collected *Poetical Works* were published in 1884. She died at Caswell Bay, Swansea, on the 3rd of June 1879.

See *Memorials of Frances Ridley Havergal* (1880), by her sister.

HAVERHILL, a market town of England, in the Sudbury parliamentary division of Suffolk, and the Saffron Walden division of Essex. Pop. of urban district (1901), 4862. It is 55 m. N.N.E. from London by the Great Eastern railway, on the Long Melford-Cambridge branch, and is the terminus of the Colne Valley railway from Chappel in Essex. The church of St Mary is Perpendicular, but extensively restored. There are large manufactures of cloth, silk, matting, bricks, and boots and shoes, and a considerable agricultural trade.

HAVERHILL, a city of Essex county, Massachusetts, U.S.A., situated on the Merrimac river, at the head of tide and navigation, and on the Boston & Maine railway, 33 m. N. of Boston. Pop. (1880) 18,472; (1890) 27,412; (1900) 37,175, of whom 8530 were foreign-born (including 2403 French Canadians, 1651 English Canadians and 2144 Irish), and 15,077 were of foreign parentage (both parents foreign-born); (1910 census) 44,115. The city, 3 m. wide and 10 m. long, lies for its entire length along the Merrimac river, from which it rises picturesquely, its surface being undulating, with several detached round hills (maximum 330 ft.). Like all old New England cities, it is irregularly laid out. A number of lakes within its limits are the source of an abundant and excellent water supply. There are fifteen public parks, the largest of which, Winnikenni Park (214 acres), contiguous to Lake Kenoza, is of great natural beauty. The city has three well-equipped hospitals, the beautiful Pentucket club house, a children’s home, an old ladies’ home and numerous charitable organizations. The schools of the city, both public and private, are of high standing; they include Bradford Academy (1803) for girls and the St James School (Roman Catholic). The public library is generously endowed, and in 1908 had about 90,000 volumes. Almost from the beginning of its history Haverhill was active industrially. Thomas Dustin, the husband of Hannah Dustin, manufactured bricks, and this industry has been carried on in the same locality for more than two hundred years. The large Stevens woollen mills are the outgrowth of mills established in 1835. The manufacture of woollen hats, established in the middle of the 18th century, is one of the prominent industries. There are large morocco factories. By far the leading industry of the city is the manufacture of boots, shoes and slippers, chiefly of the finer kinds, of which it is one of the largest producers in the world. In 1905 Haverhill ranked fourth among the cities of the United States in the product value of this manufacture, which was 4.8% of the total value of boots and shoes made in the United States. This industry began about 1795. In 1905 Haverhill’s manufacturing establishments produced goods valued at $24,446,594, 83.9% of this output being represented by boots and shoes or their accessories. One of the largest sole-leather manufactories in the world is here.

Haverhill was settled in June 1640 by a small colony from Newbury and Ipswich, and its Indian name, Pentucket, was replaced by that of Haverhill in compliment to the first minister, Rev. John Ward, who was born at Haverhill, England. In its earlier years this frontier town suffered severely from the forays of the Indians, and in 1690 the abandonment of the settlement was contemplated. Two Indian attacks are particularly noteworthy—one in 1698, in which Hannah Dustin, her new-born babe, and her nurse were carried away to the vicinity of Penacook, now Concord, New Hampshire. Here in the night Mrs Dustin, assisted by her nurse and by a captive English boy, tomahawked and scalped ten Indians (two men, the others children and women) and escaped down the river to Haverhill; a monument to her stands in City Hall Park. In 1708 250 French and Indians attacked the village, killing 40 of its inhabitants. In 1873 a destructive fire caused the loss of 35 places of business, and on the 17th of February 1882 almost the entire shoe district (consisting of 10 acres) was burned, with a loss of more than $2,000,000; but a greater business district was built on the ruins of the old. Haverhill was the birthplace of Whittier, who lived here in 1807-1836, and who in his poem *Haverhill*, written for the 250th anniversary of the town in 1890, and in many of his other poems, gave the poet’s touch to the history, the legends and the scenery of his native city. His birthplace, the scene of *Snow-Bound* in the eastern part of the city, is owned by the Whittier Association and is open to visitors. A petition from Haverhill to the national House of Representatives in 1842, praying for a peaceable dissolution of the Union, raised about J. Q. Adams, its presenter, perhaps the most violent storm in the long course of his defence of the right of petition. Haverhill was incorporated as a town in 1645 and became a city in 1869. Bradford, a town (largely residential) lying on the opposite bank of the river, became a part of the city in 1897. In October 1908, by popular vote, the city adopted a new charter providing for government by commission.

HAVERSACK, or Havresack (through the French from Ger. *Habersack*, an oat-sack, a nose-bag, *Hafer* or *Haver*, oats), the bag in which horsemen carried the oats for their horses. In Scotland and the north of England *haver*, meaning oats, is still used, as haver-meal or haver-bread. Haversack is now used for the strong bag made of linen or canvas, in which soldiers, sportsmen or travellers, carry their personal belongings, or more usually the provisions for the day.

HAVERSTRAW, a village of Rockland county, New York, U.S.A., in a township of the same name, 32 m. N. of New York City, and finely situated on the W. shore of Haverstraw Bay, an enlargement of the Hudson river. Pop. of the village (1890), 5070; (1900) 5935, of whom 1231 were foreign-born and 568 were negroes; (1905, state census) 6182; (1910) 5669; of the township (1910) 9335. Haverstraw is served by the West Shore, the New Jersey & New York (Erie), and the New York, Ontario & Western railways, and is connected by steamboat lines with Peekskill and Newburgh. The village lies at the N. base of High Tor (832 ft.). It has a public library, founded by the King's Daughters' Society in 1895 and housed in the Fowler library building. Excellent clay is found in the township, and Haverstraw is one of the largest brick manufacturing centres in the world; brick-machines also are manufactured here. The Minesceongo creek furnishes water power for silk mills, dye works and print works. Haverstraw was settled by the Dutch probably as early as 1648. Near the village of Haverstraw (in the township of Stony Point), in the Joshua Hett Smith House, or "Old Treason House," as it is generally called, Benedict Arnold and Major André met before daylight on the 22nd of September 1780 to arrange plans for the betrayal of West Point. In 1826 a short-lived Owenite Community (of about 80 members) was established near West Haverstraw and Garnerville (in the township of Haverstraw). The members of the community established a Church of Reason, in which lectures were delivered on ethics, philosophy and science. Dissensions soon arose in the community, the experiment was abandoned within five months, and most of the members joined in turn the Coxsackie Community, also in New York, and the Kendal Community, near Canton, Ohio, both of which were also short-lived. The village of Haverstraw was originally known as Warren and was incorporated under that name in 1854; in 1873 it became officially the village of Haverstraw—both names had previously been used locally. The village of West Haverstraw (pop. in 1890, 180; in 1900, 2079; and in 1910, 2369), also in Haverstraw township, was founded in 1830, was long known as Samsondale, and was incorporated under its present name in 1883.

See F. B. Green, *History of Rockland County* (New York, 1886).

HAVET, EUGÈNE AUGUSTE ERNEST (1813-1889), French scholar, was born in Paris on the 11th of April 1813. Educated at the Lycée Saint-Louis and the École Normale, he was for many years before his death on the 21st of December 1889 professor of Latin eloquence at the Collège de France. His two capital works were a commentary on the works of Pascal, *Pensées de Pascal publiées dans leur texte authentique avec un commentaire suivi* (1852; 2nd ed. 2 vols., 1881), and *Le Christianisme et ses origines* (4 vols., 1871-1884), the chief thesis of which was that Christianity owed more to Greek philosophy than to the writings of the Hebrew prophets. His elder son, Pierre Antoine Louis Havet (b. 1849), was professor of Latin philology at the Collège de France and a member of the Institute. The younger, Julien, is separately noticed.

HAVET, JULIEN (Pierre Eugène) (1853-1893), French historian, was born at Vitry-sur-Seine on the 4th of April 1853, the second son of Ernest Havet. He early showed a remarkable aptitude for learning, but had a pronounced aversion for pure rhetoric. His studies at the École des Chartes (where he took first place both on entering and leaving) and at the École des Hautes Études did much to develop his critical faculty, and the historical method taught and practised at these establishments brought home to him the dignity of history, which thenceforth became his ruling passion. His valedictory thesis at the École des Chartes, *Série chronologique des gardiens et seigneurs des Îles Normandes* (1876), was a definitive work and but slightly affected by later research. In 1878 he followed his thesis by a study called *Les Cours royales dans les Îles Normandes*. Both these works were composed entirely from the original documents at the Public Record Office, London, and the archives of Jersey and Guernsey. On the history of Merovingian institutions, Havet's conclusions were widely accepted (see *La Formule N. rex Francor., v. inl.*, 1885). His first work in this province was *Du sens du mot "romain" dans les lois franques* (1876), a critical study on a theory of Fustel de Coulanges. In this he showed that the status of the *homo Romanus* of the barbarian laws was inferior to that of the German freeman; that the Gallo-Romans had been subjected by the Germans to a state of servitude; and, consequently, that the Germans had conquered the Gallo-Romans. He aimed a further blow at Fustel's system by showing that the Frankish kings had never borne the Roman title of *vir inluster*, and that they could not therefore be considered as being in the first place Roman magistrates; and that in the royal diplomas the king issued his commands as *rex Francorum* and addressed his functionaries as *viri inlustres*. His attention having been drawn to questions of authenticity by the forgeries of Vrain Lucas, he devoted himself to tracing the spurious documents that encumbered and perverted Merovingian and Carolingian history. In his *A propos des découvertes de Jérome Vignier* (1880), he exposed the forgeries committed in the 17th century by this priest. He then turned his attention to a group of documents relating to ecclesiastical history in

the Carolingian period and bearing on the question of false decretals, and produced *Les Chartes de St-Calais* (1887) and *Les Actes de l'évêché du Mans* (1894). On the problems afforded by the chronology of Gerbert's (Pope Silvester II.) letters and by the notes in cipher in the MS. of his letters, he wrote *L'Écriture secrète de Gerbert* (1877), which may be compared with his *Notes tironiennes dans les diplômes mérovingiens* (1885). In 1889 he brought out an edition of Gerbert's letters, which was a model of critical sagacity. Each new work increased his reputation, in Germany as well as France. At the Bibliothèque Nationale, where he obtained a post, he rendered great service by his wide knowledge of foreign languages, and read voraciously everything that related, however remotely, to his favourite studies. He was finally appointed assistant curator in the department of printed books. He died prematurely at St Cloud on the 19th of August 1893.

After his death his published and unpublished writings were collected and published (with the exception of *Les Cours royales des Îles Normandes* and *Lettres de Gerbert*) in two volumes called *Questions mérovingiennes* and *Opuscules inédits* (1896), containing, besides important papers on diplomatic and on Carolingian and Merovingian history, a large number of short monographs ranging over a great variety of subjects. A collection of his articles was published by his friends under the title of *Mélanges Havet* (1895), prefixed by a bibliography of his works compiled by his friend Henri Omont.

(C. B.*)

HAVRE, LE, a seaport of north-western France, in the department of Seine-Inférieure, on the north bank of the estuary of the Seine, 143 m. W.N.W. of Paris and 55 m. W. of Rouen by the Western railway. Pop. (1906), 129,403. The greater part of the town stands on the level strip of ground bordering the estuary, but on the N. rises an eminence, la Côte, covered by the gardens and villas of the richer quarter. The central point of the town is the Place de l'hôtel de ville in which are the public gardens. It is crossed by the Boulevard de Strasbourg, running from the sea on the west to the railway station and the barracks on the east. The rue de Paris, the busiest street, starts at the Grand Quai, overlooking the outer harbour, and, intersecting the Place Gambetta, runs north and enters the Place de l'hôtel de ville on its southern side. The docks start immediately to the east of this street and extend over a large area to the south and south-east of the town. Apart from the church of Notre-Dame, dating from the 16th and 17th centuries, the chief buildings of Havre, including the hôtel de ville, the law courts, and the exchange, are of modern erection. The museum contains a collection of antiquities and paintings. Havre is the seat of a sub-prefect, and forms part of the maritime arrondissement of Cherbourg. Among the public institutions are a tribunal of first instance, a tribunal of commerce, a board of trade arbitrators, a tribunal of maritime commerce, a chamber of commerce and a branch of the Bank of France. There are lycées for boys and girls, schools of commerce and other educational establishments. Havre, which is a fortified place of the second class, ranks second to Marseilles among French seaports. There are nine basins (the oldest of which dates back to 1669) with an area of about 200 acres and more than 8 m. of quays. They extend to the east of the outer harbour which on the west opens into the new outer harbour, formed by two breakwaters converging from the land and leaving an entrance facing west. The chief docks (see Dock for plan) are the Bassin Bellot and the Bassin de l'Eure. In the latter the mail-steamers of the Compagnie Générale Transatlantique are berthed; and the Tancarville canal, by which river-boats unable to attempt the estuary of the Seine can make the port direct, enters the harbour by this basin. There are, besides, several repairing docks and a petroleum dock for the use of vessels carrying that dangerous commodity. The port, which is an important point of emigration, has regular steam-communication with New York (by the vessels of the Compagnie Générale Transatlantique) and with many of the other chief ports of Europe, North, South and Central America, the West Indies and Africa. Imports in 1907 reached a value of £57,686,000. The chief were cotton, for which Havre is the great French market, coffee, copper and other metals, cacao, cotton goods, rubber, skins and hides, silk goods, dye-woods, tobacco, oil-seeds, coal, cereals and wool. In the same year exports were valued at £47,130,000, the most important being cotton, silk and woollen goods, coffee, hides, leather, wine and spirits, rubber, tools and metal ware, earthenware and glass, clothes and millinery, cacao and fancy goods. In 1907 the total tonnage of shipping (with cargoes) reached its highest point, viz. 5,671,975 tons (4018 vessels) compared with 3,816,340 tons (3832 vessels) in 1898. Forty-two per cent of this shipping sailed under the British flag. France and Germany were Great Britain's most serious rivals. Havre possesses oil works, soap works, saw mills, flour mills, works for extracting dyes and tannin from dye-woods, an important tobacco manufactory, chemical works and rope works. It also has metallurgical and engineering works which construct commercial and war-vessels of every kind as well as engines and machinery, cables, boilers, &c.

Until 1516 Havre was only a fishing village possessing a chapel dedicated to Notre-Dame de Grâce, to which it owes the name, Havre (harbour) de Grâce, given to it by Francis I. when he began the construction of its harbour. The town in 1562 was delivered over to the keeping of Queen Elizabeth by Louis I., prince de Condé, leader of the Huguenots, and the command of it was entrusted to Ambrose Dudley, earl of Warwick; but the English were expelled in 1563, after a most obstinate siege, which was pressed forward by Charles IX. and his mother, Catherine de' Medici, in person. The defences of the town and the harbour-works were continued by Richelieu and completed by Vauban. In 1694 it was vainly besieged by the English, who also bombarded it in 1759, 1794 and 1795. It was a port of considerable importance as early as 1572, and despatched vessels to the whale and cod-fishing at Spitsbergen and Newfoundland. In 1672 it became the entrepôt of the French East India Company, and afterwards of the Senegal and Guinea companies. Napoleon I. raised it to a war harbour of the first rank, and under Napoleon III. works begun by Louis XVI. were completed.

See A. E. Borely, *Histoire de la ville du Havre* (Le Havre, 1880-1881).

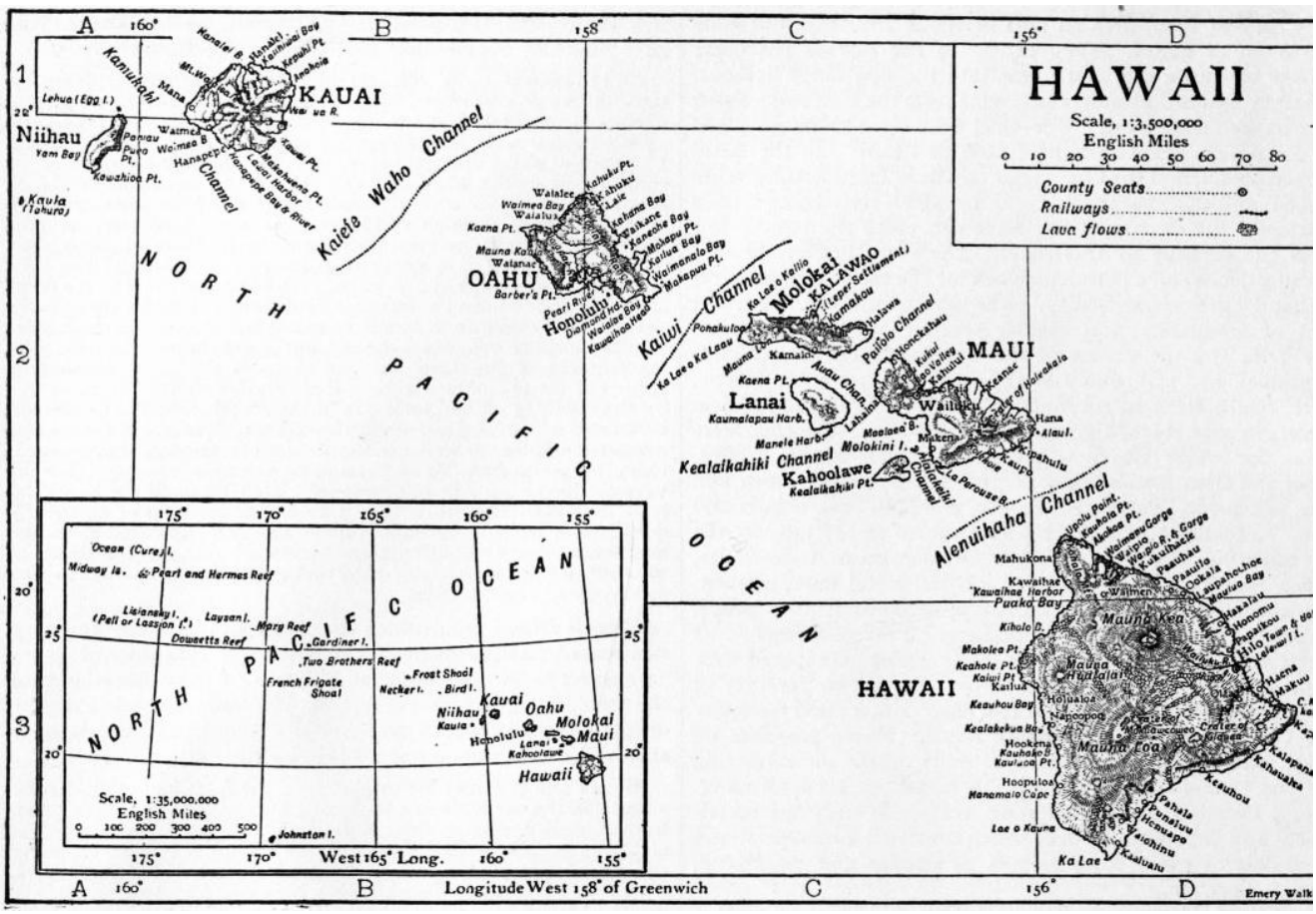
HAWAII (Hawaiian or Sandwich Islands), a Territory of the United States of America, consisting of a chain of islands in the North Pacific Ocean, eight inhabited and several uninhabited. The inhabited islands lie between

latitudes 18° 54′ and 22° 15′ N., and between longitudes 154° 50′ and 160° 30′ W., and extend about 380 m. from E.S.E. to W.N.W.; the uninhabited ones, mere rocks and reefs, valuable only for their guano deposits and shark-fishing grounds, continue the chain several hundred miles farther W.N.W. From Honolulu, the capital, which is about 100 m. N.W. of the middle of the inhabited group, the distance to San Francisco is about 2100 m.; to Auckland, New Zealand, about 3810 m.; to Sydney, New South Wales, about 4410 m.; to Yokohama, about 3400 m.; to Hong-Kong, about 4920 m.; to Manila, about 4890 m. The total area of the inhabited islands is 6651 sq. m., distributed as follows: Hawaii, 4210; Maui, 728; Oahu, about 600; Kauai, 547; Molokai, 261; Lanai, 139; Niihau, 97; Kahoolawe, 69.

All the islands are of volcanic origin, and have been built up by the eruptive process from a base about 15,000 ft. below the sea to a maximum height (Mauna Kea) on the largest island (Hawaii) of 13,823 ft. above the sea; altogether there are forty volcanic peaks. Evidence of slight upheaval is occasionally afforded by an elevated coral-reef along the shore, and evidence of the subsidence of the S. portion of Oahu for several hundred feet has been discovered by artesian borings through coral-rock. In some instances, notably the high and nearly vertical wall along the N. shore of the E. half of Molokai, there is evidence of a fracture followed by the submergence of a portion of a volcano. With the exception of the coral and a small amount of calcareous sandstone, the rocks are entirely volcanic and range from basalt to trachyte, but are mainly basalt. Cinder cones and tufa cones abound, but one of the most distinguishing features of the Hawaiian volcanoes is the great number of craters of the engulfment type, *i.e.* pit-craters which enlarge slowly by the breaking off and falling in of their walls, and discharge vast lava-flows with comparatively little violence. The age of the several inhabited islands, or at least the time since the last eruptions on them, decreases from W. to E., and on the most easterly (Hawaii) volcanic forces are still in operation. That those to the westward have long been inactive is shown by the destruction of craters by denudation, by deep ravines, valleys and tall cliffs eroded on the mountain sides, especially on the windward side, by the depth of soil formed from the disintegrated rocks, and by the amount as well as variety of vegetable life.

Hawaii Island, from which the group and later the Territory was named, has the shape of a rude triangle with sides of 90 m., 75 m. and 65 m. Its coast, unlike that of the other islands of the archipelago, has few coral reefs. Its surface consists mainly of the gentle slopes of five volcanic mountains which have encroached much upon one another by their eruptions.

Mauna Loa (“Great Mountain”), on the S., is by far the largest volcano in the world; from a base measuring at sea-level about 75 m. from N. to S. and 50 m. from E. to W., it rises gradually to a height of 13,675 ft. On its E.S.E. side, at an elevation of 4000 ft. above the sea (300 ft. above the adjoining plain on the W.) is Kilauea, from whose lava-flows the island has been extended to form its S.E. angle. To the N.N.E. of Mauna Loa, and blending with it in an intervening plateau, is Mauna Kea (“White Mountain,” so named from the snow on its summit), with a much smaller base but with steeper slopes and a crowning cinder cone 13,823 ft. above the sea, the maximum height in the Pacific Ocean; blending with Mauna Loa on the N.N.W. is Mauna Hualalai, 8269 ft. in height; and rising abruptly from the extreme N.W. shore are the remains of the oldest mountains of the island, the Kohala, with a summit 5505 ft. in height. On the land side the Kohala Mountains have been covered with lava from Mauna Kea, and form the broad plains of Kohala, having a maximum elevation of about 3000 ft.; on the ocean side, wherever this lava has not extended, erosion has gone on until bluffs 1000 ft. in height face the sea and the enormous gorges of Waipio and Waimanu, with nearly perpendicular walls as much as 3000 ft. high and extending inland 5-6 m., have been formed. Mauna Kea is not nearly so old as the Kohala Mountains, but there is no record of its eruption, nor have its lavas a modern aspect. The last eruption of Mauna Hualalai was in 1801. Mauna Loa and Kilauea are still active. Cinder cones are the predominant type of craters on both Mauna Kea and the Kohala Mountains, and they are also numerous on the upper slopes of Mauna Hualalai; but the more typically Hawaiian pit or engulfment craters also abound on Mauna Hualalai and Mokuaweoweo, crowning the summit of Mauna Loa, as well as Kilauea, to the S.E. of it, are prominent representatives of this type. Kilauea is the largest active crater in the world (8 m. in circumference) and is easily accessible. Enclosed by a circular wall from 200 to 700 ft. in height is a black and slightly undulating plain having an area of 4.14 sq. m., and within this plain is a pit, Halemaumau, of varying area (about 2000 ft. in diameter in 1905), now full of boiling lava, now empty to a depth of perhaps 1000 ft. When most active, Halemaumau affords a grand spectacle, especially at night: across the crust run glowing cracks, the crust is then broken into cakes, the cakes plunge beneath, lakes of liquid lava are formed, over whose surface play fire-fountains 10 to 50 ft. in height, the surface again solidifies and the process is repeated.[1] According to an account of the natives, a violent eruption of Kilauea occurred in 1789, or about that time, and deposits of volcanic sand, large stones, sponge-like scoria (pumice) and ashes for miles around are evidence of such an eruption. Since the Rev. William Ellis and a party of American missionaries first made the volcano known to the civilized world in 1823, the eruptions have consisted mainly in the quiet discharge of lava through a subterranean passage into the sea. In the eruptions of 1823, 1832, 1840 and 1868 the floor of the crater rose on the eve of an eruption and then sank, sometimes hundreds of feet, with the discharge of lava; but since 1868 (in 1879, 1886, 1891, 1894 and 1907; and once, before 1868, in 1855) this action has been confined to Halemaumau and such other pits as at the time existed.



Mokuaweoweo, on the flat top of Mauna Loa, is a pit crater with a floor 3.7 sq. m. in area and sunk 500-600 ft. within walls that are almost vertical and that measure 9.47 m. in circumference. Formerly, on the eve of a great eruption of Mauna Loa, this crater often spouted forth great columns of flame and emitted clouds of vapour, but in modern times this action has usually been followed by a fracture of the mountain side from the summit down to a point 1000 ft. or more below where the lava was discharged in great streams, the action at the summit diminishing or wholly ceasing when this discharge began. The first recorded eruption of Mauna Loa was in 1832; since then there have been eruptions in 1851, 1852, 1855, 1859, 1868, 1880-1881, 1887, 1896, 1899 and 1907. The eruptions of 1868, 1887 and 1907 were attended by earthquakes; in 1868 huge sea waves, 40 ft. in height, were raised, and, as they broke on the S. shore, they destroyed the villages of Punaluu, Ninole, Kawaa and Honuapo. But the eruptions of Mauna Loa have consisted mainly in the quiet discharge of enormous flows of lava: in 1859 the lava-stream, which began to run on the 23rd of January, flowed N.W., reached the sea, 33 m. distant, eight days later, and continued to flow into it until the 25th of November; and the average length of the flows from seven other eruptions is nearly 14 m. The surface of the upper slopes of Mauna Loa is almost wholly of two widely different kinds of barren lava-flows, called by the Hawaiians the *pahoehoe* and the *aa*. The *pahoehoe* has a smooth but billowy or hummocky surface, and is marked by lines which show that it cooled as it flowed. The *aa* is lava broken into fragments having sharp and jagged edges. As the same stream sometimes changes abruptly from one kind to the other, the two kinds must be due to different conditions affecting the flow, and among the conditions which may cause a stream to break up into the *aa* have been mentioned the greater depth of the stream, a sluggish current, impediments in its course just as it is granulating, and, what is more probable, subterranean moisture which causes it to cool from below upward instead of from above downward as in the *pahoehoe*. The natives are in the habit of making holes in the *aa*, and planting in them banana shoots or sweet-potato cuttings, and though the holes are simply filled with stones or fern leaves, the plants grow and in due time are productive. Another curious feature of Mauna Loa, and to some extent of other Hawaiian volcanoes, is the great number of caves, some of them as much as 60 to 80 ft. in height and several miles in length; they were produced by the escape of lava over which a crust had formed. In the midst of barren wastes to the S.E. and S.W. of Kilauea are small channels with steam cracks, along which appears the only vegetation of the region.

Maui, lying 26 m. N.W. of Hawaii, is composed of two mountains connected by an isthmus, Wailuku, 7 or 8 m. long, about 6 m. across, and about 160 ft. above the sea in its highest part.

Mauna Haleakala, on the E. peninsula, has a height of 10,032 ft., and forms a great dome-like mass, with a circumference at the base of 90 m. and regular slopes of only 8° or 9°. It has numerous cinder cones on its S.W. slope, is well wooded on the N. and E. slopes, and has on its summit an extinct pit-crater which is one of the largest in the world. This crater is 7.48 m. long, 2.37 m. wide, and covers 19 sq. m.; the circuit of its walls, which are composed of a hard grey clinkstone much fissured, is 20 m.; its greatest depth is 2720 ft. At opposite ends are breaks in the walls a mile or more in width—one about 1000 ft., the other at least 3000 ft. in depth—through which poured the lava of probably the last great eruption. From the floor of the crater rise sixteen well-preserved cinder-cones, which range from more than 400 ft. to 900 ft. in height. Along the N. base of the mountain are numerous ravines (several hundred feet deep), to the bottom of which small streams of water fall in long cascades, but elsewhere on the eastern mountain there is little erosion or other mark of age. That the mountainous mass of western Maui is much older is shown by the destruction of its crater, by its sharp ridges and by deeply eroded gorges or valleys. Its highest peak, Puu Kukui, rises 5788 ft. above the sea, and directly under this is the head of Iao Valley, 5 m. long and 2 m. wide, which has been cut in the mountain to a depth of 4000 ft. This and the smaller valleys are noted for the beauty of their tropical scenery.

Kahoolawe is a small island 6 m. S.W. of Maui. It is 14 m. long by 6 m. wide. Its mountains, which rise to a

height of 1472 ft., are rugged and nearly destitute of verdure, but the intervening valleys afford pasturage for sheep.

Lanai is another small island, 7 m. W. of Maui, about 18 m. long and 12 m. wide. It has a mountain range which rises to a maximum height, S.E. of its centre, of about 3480 ft. The N.E. slope is cut by deep gorges, and at the bottom of one of these, which is 2000 ft. deep, is the only water-supply on the island. On the S. side is a rolling table-land affording considerable pasturage for sheep, but over the whole N.W. portion of the island the trade winds, driving through the channel between Maui and Molokai, sweep the rocks bare. Kahoolawe and Lanai are both privately owned.

Molokai, 8 m. N.W. of Maui, extends 40 m. from E. to W. and has an average width of nearly 7 m. From the S.W. extremity of the island rises the backbone of a ridge which extends E.N.E. about 10 m., where it culminates in the round-topped hill of Mauna Loa, 1382 ft. above the sea. Both the northern and southern slopes of this ridge are cut by ravines and gulches, and along the N. shore is a steep sea-cliff. At the E. extremity of the ridge there is a sudden drop to a low and gently rolling plain, but farther on the surface rises gradually towards a range of mountains which comprises more than one-half the island and attains a maximum height of 4958 ft. in the peak of Kamakou. The S. slope of this range is gradual but is cut by many straight and narrow ravines, in some instances to a great depth. The N. slope is abrupt, with precipices from 1000 to 4000 ft. in height. Extending N. from the foot of the precipice, a little E. of the centre of the island, is a comparatively low peninsula (separated from the mainland by a rock wall 2000 ft. high), on which is a famous leper settlement. The peninsula forms a separate county, Kalawao.

Oahu, 23 m. N.W. of Molokai, has an irregular quadrangular form. It is traversed from S.E. to N.W. by two roughly parallel ranges of hill separated by a plain that is 20 m. long and in some parts 9 to 10 m. wide. The highest point in the island is Mauna Kaala, 4030 ft., in the Waianae or W. range; but the Koolau or E. range is much longer than the other, and its ridge is very much broken; on the land side there are many ravines formed by lateral spurs, but to the sea for 30 m. it presents a nearly vertical wall without a break. The valleys are remarkable for beautiful scenery,—peaks, cliffs, lateral ravines, cascades and tropical vegetation. There are few craters on the loftier heights, but on the coasts there are several groups of small cones with craters, some of lava, others of tufa. The greater part of the coast is surrounded by a coral reef, often half a mile wide; in several localities an old reef upheaved, sometimes 100 ft. high, forms part of the land.

Kauai, 63 m. W.N.W. of Oahu, has an irregularly circular form with a maximum diameter of about 25 m. On the N.W. is a precipice 2000 ft. or more in height and above this is a mountain plain, but elsewhere around the island is a shore plain, from which rises Mount Waialeale to a height of 5250 ft. The peaks of the mountain are irregular, abrupt and broken; its sides are deeply furrowed by gorges and ravines; the shore plain is broken by ridges and by broad and deep valleys; no other island of the group is so well watered on all sides by large mountain streams; and it is called “garden isle.”

Niihau, the most westerly of the inhabited islands, is 18 m. W. by S. of Kauai. It is 16 m. long and 6 m. wide. The western two-thirds consists of a low plain, composed of an uplifted coral reef and matter washed down from the mountains; but on the E. side the island rises precipitously from the sea and attains a maximum height of 1304 ft. at Paniau. There are large salt lagoons on the southern coast.

Climate.—The climate is cooler than that of other regions in the same latitude, and is very healthy. The sky is usually cloudless or only partly cloudy. The N.E. trades blow with periodic variations from March to December; and the leeward coast, being protected by high mountains, is refreshed by regular land and sea breezes. During January, February and a part of March the wind blows strongly from the S. or S.W.; and at this season an unpleasant hot, damp wind is sometimes felt. More rain falls from January to May than during the other months; very much more falls on the windward side of the principal islands than on the leeward; and the amount increases with the elevation also up to about 4000 ft. The greatest recorded extremes of local rainfall for a year within the larger islands range from 12 to 300 in. For Honolulu the mean annual rainfall (1884-1899) was 28.18 in.; the maximum 49.82; and the minimum 13.46. At sea level the daily average temperature for July is 76.4° F., for December 70.7° F.; the mean annual temperature is about 73° F.—68° during the night, 80° during the day—and for each 200 ft. of elevation the temperature falls about 1° F., and snow lies for most of the time on the highest mountains.

Flora.—The Hawaiian Islands have a peculiar flora. As a result of their isolation, the proportion of endemic plants is greater here than in any other region, and the great elevation of the mountains, with the consequent variation in temperature, moisture and barometric pressure, has multiplied the number of species. Towards the close of the 19th century William Hillebrand found 365 genera and 999 species, and of this number of species 653 were peculiar to this part of the Pacific. The number of species is greatest on the older islands, particularly Kauai and Oahu, and the total number for the group has been constantly increasing, some being introduced, others possibly being produced by the varying climatic conditions from those already existing. Among the peculiar dicotyledonous plants there is not a single annual, and by far the greater number are perennial and woody. Hawaiian forests are distinctly tropical, and are composed for the most part of trees below the medium height. They are most common between elevations of 2000 and 8000 ft.; there are only a few species below 2000 ft., and above 8000 ft. the growth is stunted. The destruction of considerable portions of the forests by cattle, goats, insects, fire and cutting has been followed by reforesting, the planting of hitherto barren tracts, the passage of severe forest fire laws, and the establishment of forest reserves, of which the area in 1909 was 545,746 acres, of which 357,180 were government land. In regions of heavy rainfall the ohia-lehua (*Metrosideros polymorpha*), a tree growing from 30 to 100 ft. in height, is predominant, and on account of the dense undergrowth chiefly of ferns and climbing vines, forms the most impenetrable of the forests; its hard wood is used chiefly for fuel. The koa (*Acacia koa*), from the wood of which the natives used to make the bodies of their canoes, and the only tree of the islands that furnishes much valuable lumber (a hard cabinet wood marketed as “Hawaiian mahogany”), forms extensive forests on Hawaii and Maui between elevations of 2000 and 4000 ft. The mamane (*Sophora chrysophylla*), which furnishes the best posts, grows principally on the high slopes of Mauna Kea and Hualalai. Posts and railway ties are also made from ohia-ha (*Eugenia sandwicensis*). In many districts between elevations of 2000 and 6000 ft., where there is only a moderate amount of moisture, occur mixed forests of koa, koaia (*Acacia koaia*), kopiko (*Straussia oncocarpa* and *S. hawaiiensis*), kolea (*Myrsine kauaiensis* and *M. lanaiensis*), naio or bastard sandalwood (*Myoporum sandwicense*) and pua (*Olea sandwicensis*); of these the koaia furnishes a hard wood suitable for the manufacture of furniture, and out of it the natives formerly made spears and fancy paddles. The wood of the naio when dry has a fragrance resembling that of sandalwood, and is used for torches in fishing. The kukui (*Aleurites triloba*) and the algaroba (*Prosopis juliflora*) are the principal species of forest trees that

occur below elevations of 2000 ft. The kukui grows along streams and gulches; from its nuts, which are very oily, the natives used to make candles, and it is still frequently called the candlenut tree. On the leeward side, from near the sea level to elevations of 1500 ft., and on ground that was formerly barren, the algaroba tree has formed dense forests since its introduction in 1837. Forests of iron-wood and blue gum have also been planted. Sandalwood (*Santalum album* or *freycinetianum*) was once abundant on rugged and rather inaccessible heights, but so great a demand arose for it in China,[2] where it was used for incense and for the manufacture of fancy articles, that the supply was nearly exhausted between 1802 and 1836; since then some young trees have sprung up, but the number is relatively small. Other peculiar trees prized for their wood are: the kauila (*Alphitonia ponderosa*), used for making spears, mallets and other tools; the kela (*Mezoneuron kauaiense*), the hard wood of which resembles ebony; the halapepe (*Dracaena aurea*), out of the soft wood of which the natives carved many of their idols; and the wiliwili (*Erythrina monosperma*), the wood of which is as light as cork and is used for outriggers. In 1909, on six large rubber plantations, mostly on the windward side of the island of Maui, there were planted 444,450 ceara trees, 66,700 hevea trees, and 600 castilloa trees. About the only indigenous fruit-bearing plants are the Chilean strawberry (*Fragaria chilensis*) and the ohelo berry (*Vaccinium reticulatum*), both of which grow at high elevations on Hawaii and Maui. The ohelo berry is famous in song and story, and formerly served as a propitiatory offering to Pele. The number of fruit-bearing trees, shrubs and plants that have been introduced and are successfully cultivated or grow wild is much greater; among them are the mango, orange, banana, pineapple, coconut, palm, grape, fig, strawberry, litchi (*Nephelium litchi*)—the favourite fruit of the Chinese—avocado or alligator pear (*Persea gratissima*), Sapodilla pear (*Achras sapota*), loquat or mespilus plum (*Eriobotrya japonica*), Cape gooseberry (*Physalis peruviana*), tamarind (*Tamarindus indica*), papaw (*Carica papaya*), resembling in appearance the cantaloupe, granadilla (*Passiflora quadrangularis*) and guava (*Psidium guajava*). Most of the native grasses are too coarse for grazing, and some of them, particularly the hilo grass (*Paspalum conjugatum*), which forms a dense mat over the ground, prevent the spread of forests. The pili grass (*Heteropogon contortus*) is also noxious, for its awns get badly entangled in the wool of sheep. The native manienie (*Stenotaphrum americanum*) and kukai (*Panicum pruriens*), however, are relished by stock and are found on all the inhabited islands; the Bermuda grass (*Cynodon dactylon*), a June grass (*Poa annua*), and Guinea grass (*Panicum jumentorum*) have also been successfully introduced. The *Paspalum orbiculare* is the large swamp grass with which the natives covered their houses. On the island of Niihau is a fine grass (*Cyperus laevigatus*), out of which the beautiful Niihau mats were formerly made; it is used in making Panama hats. Mats were also made of the leaves of the hala tree (*Pandanus odoratissimus*). The wauke plant (*Broussonetia papyrifera*), and to a less extent the mamake (*Pipturus albidus*) and *Boehmeria stipularis*, furnished the bark out of which the famous kapa cloth was made, while the olopa (*Cheirodendron gaudichaudii*) and the koolea (*Myrsine lessertiana*) furnished the dyes with which it was coloured. From several species of *Cibotium* is obtained a glossy yellowish wool, used for making pillows and mattresses. Ferns, of which there are about 130 species varying from a few inches to 30 ft. in height, form a luxuriant undergrowth in the ohia-lehua and the koa forests, and the islands are noted for the profusion and beautiful colours of their flowering plants. Kalo (*Colocasia antiquorum*, var., *esculenta*), which furnishes the principal food of the natives, and sugar cane (*Saccharum officinarum*), the cultivation of which has become the chief industry of the islands, were introduced before the discovery of the group by Captain Cook in 1778. Sisal hemp has been introduced, and there is a large plantation of it W. of Honolulu.

Over seventy varieties of seaweeds, growing in the fresh-water pools and in the waters near the coast, are used by the natives as food. These *limus*, as they are called by the Kanakas, are washed, salted, broken and eaten as a relish or as a flavouring for fish or other meat. The culture of such algae may prove of economic importance; gelatine, glue and agar-agar would be valuable by-products.

Fauna.—A day-flying bat, whales and dolphins are about the only indigenous mammals; hogs, dogs and rats had been introduced before Cook's discovery. Fish in an interesting variety of colours and shapes abound in the sea and in artificial ponds along the coasts.[3] There are some fine species of birds, and the native avifauna is so distinctive that Wallace argued from it that the Hawaiian Archipelago had long been separated from any other land. There were native names for 89 varieties. The most typical family is the *Drepanidae*, so named for the stout sickle-shaped beak with which the birds extract insects from heavy-barked trees; Gadow considers the family American in its origin, and thinks that the *Moho*,[4] a family of honey-suckers, were later comers and from Australia. The *mamo* (*Drepanis pacifica*) has large golden feathers on its back; it is now very rare, and is seldom found except on Mauna Loa, Hawaii, about 4000 ft. above the sea. The smaller yellow feathers, once used for the war cloaks of the native chiefs, were furnished by the *oo* (*Moho nobilis*) and the *aa* (*Moho braccatus*), now found only occasionally in the valleys of Kauai near Hanalei, on the N. side of the island; scarlet feathers for similar mantles were taken from the *iiwi* (*Vestiaria coccinea*), a black-bodied, scarlet-winged song-bird, which feeds on nectar and on insects found in the bark of the koa and ohia trees, and from the *Fringilla coccinea*. In the old times birds were protected by the native belief that divine messages were conveyed by bird cries, and by royal edict forbidding the killing of species furnishing the material for feather cloaks, contributions towards which were long almost the only taxes paid. Thus the downfall of the monarchy and of the ancient cults have been nearly fatal to some of the more beautiful birds; feather ornaments, formerly worn only by nobles, came to be a common decoration; and many species (for example the Hawaiian gallinule, *Gallinula sandwicensis*, which, because of its crimson frontal plate and bill, was said by the natives to have played the part of Prometheus, burning its head with fire stolen from the gods and bestowed on mortals) have been nearly destroyed by the mongoose, or have been driven from their lowland homes to the mountains, such being the fate of the mamo, mentioned above, and of the Sandwich Island goose (*Bernicla sandwicensis*), which is here a remarkable example of adaptation, as its present habitat is quite arid. This goose has been introduced successfully into Europe. A bird called moho, but actually of a different family, was the *Pennula ecaudata* or *millsi*, which had hardly any tail, and had wings so degenerate that it was commonly thought wingless. The turnstone (*Strepsilas interpres*) arrives in the islands in August after breeding in Alaska. There are no parrots. The only reptiles are three species of skinks and four of the gecko; the islands are famed for their freedom from snakes. Land-snails, mostly *Achatinellidae*, are remarkably frequent and diverse; over 300 varieties exist. Insects are numerous, and of about 500 species of beetle some 80% are not known to exist elsewhere; cockroaches and green locusts are pests, as are, also, mosquitoes,[5] wasps, scorpions, centipedes and white ants, which have all been introduced from elsewhere.

Soil.—The soil of the Territory is almost wholly a decomposition of lava, and in general differs much from the soils of the United States, particularly in the large amount of nitrogen (often more than 1.25% in cane and coffee soil, and occasionally 2.2%) and iron, and in the high degree of acidity. High up on the windward side of a mountain it is thin, light red or yellow, and of inferior quality. Low down on the leeward side it is dark red and fertile, but still too pervious to retain moisture well. In the older valleys on the islands of Kauai, Oahu and Maui, as well as on the lowland plain of Molokai, the soil is deeper and usually, too, the moisture is retained by a heavy clay. In some places along the coast there is a narrow strip of decomposed coral limestone; often, too, a coral reef has served to catch the sediment washed down the mountain side until a deep sedimentary soil has been

deposited. On the still lower levels the soil is deepest and most productive.

Agriculture.—The tenure by which lands were held before 1838 was strictly feudal, resembling that of Germany in the 11th century, and lands were sometimes enfeoffed to the seventh degree. But in the "Great Division" which took place in 1848 and forms the foundation of present land titles, about 984,000 acres, nearly one-fourth of the inhabited area, were set apart for the crown, about 1,495,000 acres for the government, and about 1,619,000 acres for the several chiefs; and the common people received fee-simple titles[6] for their house lots and the pieces of land which they cultivated for themselves, about 28,600 acres, almost entirely in isolated patches of irregular shape hemmed in by the holdings of the crown, the government or the great chiefs. Generally the chiefs ran into debt; many died without heirs; and their lands passed largely into the hands of foreigners. At the abolition of the monarchy in 1893, the crown domains were declared to be public lands, and, with the other government lands, were by the terms of annexation turned over to the United States in 1898. They had been offered for sale or lease in accordance with land acts (of 1884 and 1895—the latter corresponding generally to the land laws of New Zealand) designed to promote division into small farms and their immediate improvement. In 1909 the area of the public land was about 1,700,000 acres. In 1900 there were in the Territory 2273 farms, of which 1209 contained less than 10 acres, 785 contained between 10 and 100 acres, and 116 contained 1000 acres or more. The natives seldom cultivate more than half an acre apiece, and the Portuguese settlers usually only 25 or 30 acres at most. Of the total area of the Territory only 86,854 acres, or 2.77%, were under cultivation in 1900, and of this 65,687 acres, or 75.6%, were divided into 170 farms and planted to sugar-cane. In 1909 it was estimated that 213,000 acres (about half of which was irrigated) were planted to sugar, one half being cropped each year. The average yield per acre of cane-sugar is the greatest in the world, 30 to 40 tons of cane being an average per acre, and as much as 10¼ tons of sugar having been produced from a single acre under irrigation. The cultivation of the cane was greatly encouraged by the Reciprocity Treaty of 1875, which established practically free trade between the islands and the United States, and since 1879 it has been widely extended by means of irrigation, the water being obtained both by pumping from numerous artesian wells and by conducting surface water through canals and ditches. The sugar farms are mostly on the islands of Hawaii, Oahu, Maui and Kauai, at the bases of mountains; those on the leeward side have the better soil, but require much more irrigating. The product increased from 26,072,429 ℔ in 1876 to 259,789,462 ℔ in 1890, 542,098,500 ℔ in 1899 and about 1,060,000,000 ℔ (valued at more than $40,000,000) in 1909. Nearly all of it is exported to the United States. Rice was the second product in importance until competition with Japan, Louisiana and Texas made the crop a poor investment; improved culture and machinery may restore rice culture to its former importance. It is grown almost wholly by Japanese and Chinese on small low farms along the coasts, mostly on the islands of Kauai and Oahu. In 1899 the product amounted to 33,442,400 ℔; in 1907 about 12,000 acres were planted, and the crop was estimated to be worth $2,500,000. Coffee of good quality is grown at elevations ranging between 1000 to 3000 ft. above the sea; the Hawaiian product is called Kona coffee—from Kona, a district of the S. side of Hawaii island, where much of it is grown. In 1909 about 4500 acres were in coffee, the value of the crop was $350,000; and 1,763,119 ℔ of coffee, valued at $211,535, were exported from Hawaii to the mainland of the United States. A few bananas and (especially from Oahu) pineapples of fine quality are exported; since 1901 the canning of pineapples has been successfully carried on, and in the year ending May 31, 1907, 186,700 cases were exported, being packed in nine canneries. Oranges, lemons, limes, figs, mangoes, grapes and peaches, besides a considerable variety of vegetables, are raised in small quantities for local consumption. In 1909 the exports of fruits and nuts to the continental United States were valued at $1,457,644. An excellent quality of sisal is grown. Rubber trees have been planted with some success, particularly on the eastern part of the island of Maui; they were not tapped for commercial use until 1909. In 1907 there were vanilla plantations in the islands of Oahu and Hawaii. Tobacco of a high grade, especially for wrappers, has been grown at the Agricultural Experiment Station's farm at Hamakua, on the island of Hawaii, where the tobacco is practically "shade grown" under the afternoon fogs from Mauna Kea. Cotton and silk culture have been experimented with on the islands; and the work of the Hawaiian Agricultural Experiment Station is of great value, in introducing new crops, in improving old, in studying soils and fertilizers and in entomological research. Honey is a crop of some importance; in 1908 the yield was about 950 tons of honey and 15 tons of wax. The small islands of Lanai, Niihau and Kahoolawe are devoted chiefly to the raising of sheep and cattle—Niihau is one large privately owned sheep-ranch. There are large cattle-ranches on the islands supplying nearly all the meat for domestic consumption, and cattle-raising is second in importance to the sugar industry. It was estimated in 1908 that there were about 130,500 cattle and about 99,500 sheep on the islands. The "native" cattle, descended from those left on the islands by early navigators, are being improved by breeding with imported Hereford, Shorthorn, Angus and Holstein bulls, the Herefords being the best for the purpose. In the fiscal year 1908, 359,413 ℔ of wool (valued at $58,133) and 928,599 ℔ of raw hides (valued at $87,599) were shipped from the Territory to the United States.

Minerals.—The islands have large (unworked) supplies of pumice, sandstone, sulphur, gypsum, alum and mineral-paint ochres, and some salt, kaolin and sal-ammoniac, but otherwise they are without mineral wealth other than lava rocks for building purposes.

Manufactures.—The manufactures are chiefly sugar, fertilizers, and such products of the foundry and machine shop as are required for the machinery of the sugar factories. Most of the manufacturing industries, indeed, are maintained for supplying the local market, there being only three important exceptions—the manufacture of sugar, the cleaning of coffee and the cleaning and polishing of rice. The manufacture of sugar, which began between 1830 and 1840, has long been much the most important of the manufacturing industries: thus in 1900 the value of the sugar production was $19,254,773, and the total value of all manufactures, including custom work and repairing, was only $24,992,068. Next to sugar, fertilizers were the most important manufactured product, their value being $1,150,625; the products of the establishments for the polishing and cleaning of rice were valued at $664,300. Of the total product in 1900, only 18.5% (by value) is to be credited to the city of Honolulu. The growth of manufacturing is much hampered by the lack of labour. Excellent water power is utilized on the island of Kauai in an electric plant.

Communications.—There are good wagon roads on the islands, some of them macadamized, built of the hard blue lava rock. Hawaii had in 1909 about 200 m. of railway, of which the principal line is that of the Oahu Railway & Land Company (about 89 m.), extending from Honolulu W. and N. along the coast to Kahuku about one-half the distance around Oahu; another line from Kahuku Mill, the most northerly point of the island, S.E. to Honolulu, was projected in 1905; on the island of Hawaii is the Hilo Railroad (about 46 m.), carrying sugar, pineapples, rubber and lumber; other railways are for the most part short lines on sugar estates and in coffee-producing sections of the islands of Hawaii and Maui. Each of the larger islands has one or more ports which a local steamboat serves regularly, and Honolulu has the regular service of seven trans-Pacific lines (the American-Hawaiian Steamship Co., the Canadian-Australian Steamship Co., the Matson Navigation Co., the Oceanic Steamship Co., the Pacific Mail Steamship Co., the Mexican Oriental and the Toyo Kisen Kaisha); it is a midway station for vessels between the United States (mainland) and Australia and Southern Asia. In 1908 five steamship

companies were engaged in traffic between island ports and the mainland (including Mexico). Honolulu has cable connexion with San Francisco and the East, and the several islands of the group are served by wireless telegraph.

Commerce.—The position of the archipelago, at the "cross-roads" of the North Pacific, has made it commercially important since the days of the whale fishery, and it has a practical monopoly of coaling, watering and victualling. Its main disadvantage is the lack of harbours—Honolulu and Pearl Harbor are the only ones in the archipelago; but under the River and Harbour Act of 1905 examinations and surveys were made to improve Hilo Bay on the island of Hawaii. Pearl Harbor is the U.S. naval station, and a great naval dock, nearly 1200 ft. long, was projected for the station in 1908. Within recent years commerce has grown greatly in volume; it has always been almost entirely with the United States. In 1880 the value of imports from the United States was $2,086,000, that of exports to the United States was $4,606,000; in 1907 the value of shipments of domestic merchandise from the United States to Hawaii was $5,357,907, and the value of shipments of domestic merchandise from Hawaii to the United States was $31,984,433, of which $30,111,524 was the value of brown sugar, $133,133 the value of rice, $601,748 the value of canned fruits, $124,146 the value of green, ripe or dried fruits, $117,403 the value of hides and skins, and $105,515 the value of green or raw coffee. The shipments of foreign merchandise each way are relatively insignificant. In the fiscal year 1908 the exports from Hawaii to foreign countries were valued at $597,640, ten times as much as in 1905 ($59,541); the imports into Hawaii from foreign countries were valued at $4,682,399 in the fiscal year 1908, as against $3,014,964 in 1905.

Population.—The total population of the islands in 1890 was 89,990; in 1900 it was 154,001, an increase within the decade of 71.13%; in 1910 it was 191,909. In 1908 there were about 72,000 Japanese, 18,000 Chinese, 5000 Koreans, 23,000 Portuguese, 2000 Spanish, 2000 Porto Ricans, 35,000 Hawaiians and part Hawaiians and 12,000 Teutons. Of the total for 1900 there were 61,111 Japanese, 25,767 Chinese and 233 negroes; of the same total there were 90,780 foreign-born, of whom 56,234 were natives of Japan, and 6512 were natives of Portugal. There were in all in 1900, 106,369 males (69.1%; a preponderance due to the large number of Mongolian labourers, whose wives are left in Asia) and only 47,632 females. About three-fifths of the Hawaiians and nearly all of American, British or North European descent are Protestants. Most of the Portuguese and about one-third of the native Hawaiians are Roman Catholics. The Mormons claim more than 4000 adherents, whose principal settlement is at Laie, on the north-east shore of Oahu; the first Mormon missionaries came to the islands in 1850. The population of 1910 was distributed among the several islands as follows: Oahu, 82,028; Hawaii, 55,382; Kauai and Niihau, 23,952; Kalawao, 785; and Maui, Lanai, Kahoolawe and Molokai, 29,762. The population of Honolulu district, the entire urban population of the Territory, was 22,907 in 1890, 39,306 in 1900, and 52,183 in 1910.

Native population.

The aboriginal Hawaiians (sometimes called Kanakas, from a Hawaiian word *kanaka*, meaning "man") belong to the Malayo-Polynesian race; they probably settled in Hawaii in the 10th century, having formerly lived in Samoa, and possibly before that in Tahiti and the Marquesas. Their reddish-brown skin has been compared in hue to tarnished copper. Their hair is dark brown or black, straight, wavy or curly; the beard is thin, the face broad, the profile not prominent, the eyes large and expressive, the nose somewhat flattened, the lips thick, the teeth excellent in shape and of a pearly whiteness. The skull is sub-brachycephalic in type, with an index of 82.6 from living "specimens" and 79 from a large collection of skulls; it is never prognathous. Most of the people are of moderate stature, but the chiefs and the women of their families have been remarkable for their height, and 400 pounds was formerly not an unusual weight for one of this class. This corpulence was due not alone to over-feeding but to an almost purely vegetable diet; stoutness was a part of the ideal of feminine beauty. The superiority in physique of the nobles to the common people may have been due in part to a system of massage, the *lomi-lomi*; it is certainly contrary to the belief in the bad effects of inbreeding—among the upper classes marriage was almost entirely between near relatives.

The Rev. William Ellis, an early English missionary, described the natives as follows: "The inhabitants of these islands are, considered physically, amongst the finest races in the Pacific, bearing the strongest resemblance to the New Zealanders in stature, and in their well-developed muscular limbs. The tattooing of their bodies is less artistic than that of the New Zealanders, and much more limited than among some of the other islanders. They are also more hardy and industrious than those living nearer the equator. This in all probability arises from their salubrious climate, and the comparative sterility of their soil rendering them dependent upon the cultivation of the ground for the yam, the arum, and the sweet potato, their chief articles of food. Though, like all undisciplined races, the Sandwich Islanders [Hawaiians] have proved deficient in firm and steady perseverance, they manifest considerable intellectual capability. Their moral character, when first visited by Europeans, was not superior to that of other islanders; and excepting when improved and preserved by the influence of Christianity, it has suffered much from the vices of intemperance and licentiousness introduced by foreigners. Polygamy prevailed among the chiefs and rulers, and women were subject to all the humiliations of the tabu system, which subjected them to many privations, and kept them socially in a condition of inferiority to the other sex. Infanticide was practised to some extent, the children destroyed being chiefly females. Though less superstitious than the Tahitians, the idolatry of the Sandwich Islanders was equally barbarous and sanguinary, as, in addition to the chief objects of worship included in the mythology of the other islands, the supernatural beings supposed to reside in the volcanoes and direct the action of subterranean fires rendered the gods objects of peculiar terror. Human sacrifices were slain on several occasions, and vast offerings presented to the spirits supposed to preside over the volcanoes, especially during the periods of actual eruptions. The requisitions of their idolatry were severe and its rites cruel and bloody. Grotesque and repulsive wooden figures, animals and the bones of chiefs were the objects of worship. Human sacrifices were offered whenever a temple was to be dedicated, or a chief was sick, or a war was to be undertaken; and these occasions were frequent. The apprehensions of the people with regard to a future state were undefined, but fearful. The lower orders expected to be slowly devoured by evil spirits, or to dwell with the gods in burning mountains. The several trades, such as that of fisherman, the tiller of the ground, and the builder of canoes and houses, had each their presiding deities. Household gods were also kept, which the natives worshipped in their habitations. One merciful provision, however, had existed from time immemorial, and that was [the *puuhonuas*] sacred inclosures, places of refuge, into which those who fled in time of war, or from any violent pursuer, might enter and be safe. To violate their sanctity was one of the greatest crimes of which a man could be guilty." The native religion was an admixture of idolatry and hero-worship, of some ethical but little moral force. The king was war chief, priest and god in one, and the shocking licence at the death of a king was probably due to the feeling that all law or restraint was annulled by the death of the king—incarnate law. The mythic and religious legends of the people were preserved in chants, handed down from generation to generation; and in like poetic form was kept the knowledge of the people of botany, medicine and other sciences. Name-songs, written at the birth of a chief, gave his genealogy and the deeds of his ancestors;

dirges and love-songs were common. These were without rhyme or rhythm, but had alliteration and a parallelism resembling Hebrew poetry. Drums, gourd and bamboo flutes, and a kind of guitar, were known before Cook's day.

When the islands first became known to Europeans, the Hawaiian family was in a stage including both polyandry and polygyny, and, according to Morgan, older than either: two or more brothers, with their wives, or two or more sisters with their husbands, cohabited with seeming promiscuity. This system called *punalua* (a word which in the modern vernacular means merely "dear friend") was first brought to the attention of ethnologists in 1871 by Lewis H. Morgan (who was incorrect in many of his premises) and was made the basis of his second stage, the *punaluan*, in the evolution of the family. These conditions did not last long after the coming of the missionaries. Descent was more commonly traced through the female line. As regard cannibalism, it appears that the heart and liver of the human victims offered in the temples were eaten as a religious rite, and that the same parts of any prominent warrior slain in battle were devoured by the victor chiefs, who believed that they would thereby inherit the valour of the dead man. Under *taboo* as late as 1819 women were to be put to death if they ate bananas, cocoa-nuts, pork, turtles or certain fish. In the days of idolatry the only dress worn by the men was a narrow strip of cloth wound around the loins and passed between the legs. Women wore a short petticoat made of *kapa* cloth (already referred to), which reached from the waist to the knee. But now the common class of men wear a shirt and trousers; the better class are attired in the European fashion. The women are clad in the holoka, a loose white or coloured garment with sleeves, reaching from the neck to the feet. A coloured handkerchief is twisted around the head or a straw hat is worn. Both sexes delight in adorning themselves with garlands (*leis*) of flowers and necklaces of coloured seeds. The Hawaiians are a good-tempered, light-hearted and pleasure-loving race. They have many games and sports, including boxing, wrestling (both in and out of water), hill-sliding, spear-throwing, and a game of bowls played with stone discs. Both sexes are passionately fond of riding. They delight to be in the water and swim with remarkable skill and ease. In the exciting sport of surf-riding, which always astonishes strangers, they balance themselves lying, kneeling or standing on a small board which is carried landwards on the curling crest of a great roller. All games were accompanied by gambling. Dances, especially the indecent *hula*, "danse du ventre," were favourite entertainments.

Even at the time when they were first known to Europeans, they had stone and lava hatchets, shark's-tooth knives, hardwood spades, *kapa* cloth or paper, mats, fans, fish-hooks and nets, woven baskets, &c., and they had introduced a rough sort of irrigation of the inland country with long canals from highlands to plains. They derived their sustenance chiefly from pork and fish (both fresh and dried), from seaweed (*limu*), and from the kalo (*Colocasia antiquorum*, var. *esculenta*), the banana, sweet potato, yam, bread-fruit and cocoa-nut. From the root of the kalo is made the national dish called *poi*; after having been baked and well beaten on a board with a stone pestle it is made into a paste with water and then allowed to ferment for a few days, when it is ready to be eaten. One of the table delicacies of former days was a particular breed of dog which was fed exclusively on poi before it was killed, cooked and served. Like other South Sea Islanders they made an intoxicating drink, *awa* or *kava*, from the roots of the *Macropiper latifolium* or *Piper methysticum*; in early times this could be drunk only by nobles and priests. The native dwellings are constructed of wood, or occasionally are huts thatched with grass at the sides and top. What little cooking is undertaken among the poorer natives is usually done outside. The oven consists of a hole in the ground in which a fire is lighted and stones made hot; and the fire having been removed, the food is wrapped up in leaves and placed in the hole beside the hot stones and covered up until ready; or else, as is now more common, the cooking is done in an old kerosene-oil can over a fire.

The Hawaiian language is a member of the widely-diffused Malayo-Polynesian group and closely resembles the dialect of the Marquesas; Hawaiians and New Zealanders, although occupying the most remote regions north and south at which the race has been found, can understand each other without much difficulty. Various unsuccessful attempts have been made to prove the language Aryan in its origin. It is soft and harmonious, being highly vocalic in structure. Every syllable is open, ending in a vowel sound, and short sentences may be constructed wholly of vocalic sounds. The only consonants are *k*, *l*, *m*, *n* and *p*, which with the gently aspirated *h*, the five vowels, and the vocalic *w*, make up all the letters in use. The letters *r* and *t* have been discarded in favour of *l* and *k*, as expressing more accurately the native pronunciation, so that, for example, *taro*, the former name of the *Colocasia* plant, is now *kalo*. The language was not reduced to a written form until after the arrival of the missionaries. A Hawaiian spelling book was printed in 1822; in 1834 two newspapers were founded; and in 1839 the first translation of the Bible was published.

In spite of moral and material progress—indeed largely because of changes in their food, clothing, dwellings and of other "advantages" of civilization—the race is probably dying out. Captain Cook estimated the number of natives at 400,000, probably an over-estimate; in 1823 the American missionaries estimated their number at 142,000; the census of 1832 showed the population to be 130,313; the census of 1878 proved that the number of natives was no more than 44,088. In 1890 they numbered 34,436; in 1900, 29,834, a decrease of 4602 or 13.3% within the decade. To account for this it is said that the blood of the race has become poisoned by the introduction of foreign diseases. The women are much less numerous than the men; and the married ones have few children at the most; two out of three have none. Moreover, the mothers appear to have little maternal instinct and neglect their offspring. It is, however, thought by some that these causes are now diminishing in force, and that the "fittest" of the race may survive. The part-Hawaiians, the offspring of intermarriage between Hawaiian women and men of other races, increased from 3420 in 1878 to 6186 in 1890 and 7835 in 1900.

Immigration. The pressing demand for labour created by the Reciprocity Treaty of 1875 with the United States led to great changes in the population of the Hawaiian Islands. It became the policy of the government to assist immigrants from different countries. In 1877 arrangements were made for the importation of Portuguese families from the Azores and Madeira, and during the next ten years about 7000 of these people were brought to the islands; in 1906-1907 there was a second immigration from the Azores and Madeira of 1325 people. In 1900 the total number of Portuguese in the islands, including those born there, was not far from 16,000, about 2400 of whom were employed in sugar plantations. They have shown themselves to be industrious, thrifty and law-abiding. In 1907 2201 Spanish immigrants from the sugar district about Malaga arrived in Hawaii, and about the same number of Portuguese immigrated in the same year. The Board of Immigration, using funds contributed by planters, was very active in its efforts to encourage the immigration of suitable labourers, but the general immigration law of 1907 prohibited the securing of such immigration through contributions from corporations. Persistent efforts have also been made to introduce Polynesian islanders, as being of a cognate race with the Hawaiians, but the results have been wholly unsatisfactory. About 2000, mainly from the Gilbert Islands, were brought in at the expense of the government between 1878 and 1884; but they did not give satisfaction either as labourers or as citizens, and most of them have been returned to their homes. There

never existed any treaty or labour convention between Hawaii and China. In early days a limited number of Chinese settled in the islands, intermarried with the natives and by their industry and economy generally prospered. About 750 of them were naturalized under the monarchy. The first importation of Chinese labourers was in 1852. In 1878 the number of Chinese had risen to 5916. During the next few years there was such a steady influx of Chinese free immigrants that in the spring of 1881 the Hawaiian government sent a despatch to the governor of Hong Kong to stop this invasion. Again, in April 1883, it was suddenly renewed, and within twenty days five steamers arrived from Hong Kong bringing 2253 Chinese passengers, followed the next month by 1100 more, with the news that several thousand more were ready to embark. Accordingly, the Hawaiian government sent another despatch to the governor of Hong Kong, refusing to permit any further immigration of male Chinese from that port. Various regulations restricting Chinese immigration were enacted from time to time, until in 1886 the landing of any Chinese passenger without a passport was prohibited. The number of Chinese in the islands had then risen to 21,000. The consent of the Japanese government to the immigration of its subjects to Hawaii was obtained with difficulty in 1884, and in 1886 a labour convention was ratified. Subsequently the increase of the Japanese element in the population was rapid. It rose from 116 in 1884 to 12,360 in 1890 and 24,400 in 1896. Most of these were recruited from the lowest classes in Japan. Unlike the Chinese, they show no inclination to intermarry with the Hawaiians. The effect of making Hawaii a Territory of the United States was to put an end to all assisted immigration, of whatever race, and to exclude all Chinese labourers. No Chinese labourer is allowed to enter any other Territory of the Union from Hawaii; and the act of Congress of the 26th of February 1885, “to prohibit the importation and migration of foreigners and aliens under contract or agreement to perform labour in the United States, its Territories and the District of Columbia,” and the amending and supplementary acts, are extended to it. But in the treaty of 1894 between the United States and Japan there is nothing to limit the free immigration of Japanese; and several companies have been formed to promote it. The system of contract labour, which was abolished by the act of Congress in 1900, and under which labourers had been restrained from leaving their work before the end of the contract term, concerned few labourers except the Japanese. Various methods of co-operation or profit-sharing are in successful operation on some plantations.

An interesting sociological problem is raised by the presence of the large Asiatic element in the population. The Japanese and Koreans, and in less measure the Chinese, act as domestic servants, work under white contractors on irrigating ditches and reservoirs, do most of the plantation labour and compete successfully with whites and native islanders in all save skilled urban occupations, such as printing and the manufacture, of machinery. The “Yellow Peril” is considered less dangerous in Hawaii than formerly, although it was used as a political cry in the campaign for American annexation. No success met the apparently well-meaning efforts of the Central Japanese League which was organized in November and December 1903 to promote the observance of law and order by the Japanese in the islands, who assumed a too independent attitude and felt themselves free from governmental control whether Japanese or American; indeed, after the League had been in operation for a year or more, it almost seemed that it contributed to industrial disorders among the Japanese. At about the same time Japanese immigration to Hawaii fell off upon the opening of new fields for colonization by the Russo-Japanese War, and Korean immigration was promoted by employers on the islands. From the first of January 1903 to the 30th of June 1905 Japanese immigrants numbered 18,027; Koreans 7388 (four Koreans to every ten Japanese); but in the last twelve months of this same period there were 4733 Koreans to 5941 Japanese (eight Koreans to every ten Japanese). Another fact which is possibly contributing to the solution of the problem is that the Japanese are leaving the islands in large numbers as compared with the Koreans. The Japanese leaving Hawaii between the 14th of June 1900 and the 31st of December 1905 numbered 42,313, or 4284 more than the number of Japanese immigrants arriving during the same period. The corresponding figures for Koreans during the same period are as follows: number leaving between the 14th of June 1900 and the 31st of December 1905, 721, or 6673 less than the Korean immigrants for the same period. The acceleration of the departure of the Japanese is shown by the fact that in the eighteen months (July 1904 to January 1906) occurred 19,114 of the 42,313 departures in the sixty-six months from July 1900 to January 1906.[7] After 1906, owing to restrictions by the Japanese government, immigration to Hawaii greatly decreased. At the same time the number of departures was decreasing rapidly. The change in the character of the immigration of Japanese is shown by the fact that in the fiscal year 1906-1907 the ratio of female immigrants to males was as 1 to 8, in the fiscal year 1907-1908 it was as 1 to 2, and in the latter year, of 4593 births in the Territory, 2445 were Japanese.

Administration.—The Hawaiian Islands are governed under an Act of Congress, signed by the president on the 30th of April 1900, which first organized them as a Territory of the United States. The legislature, which meets biennially at Honolulu, consists of a Senate of 15 members holding office for four years, and a House of Representatives of 30 members holding office for two years. In order to vote for Representatives or Senators, the elector must be a male citizen of the United States who has attained the age of twenty-one years, has lived in the Territory not less than one year preceding, and is able to speak, read and write the English or Hawaiian language. No person is allowed to vote by reason of being in or attached to the army or navy. The executive power is vested in a governor, appointed by the president and holding office for four years. He must not be less than thirty-five years of age and must be a citizen of the Territory. The secretary of the Territory is appointed in like manner for a term of the same length. The governor appoints, by and with the consent of the Senate of the Territory, an attorney-general, treasurer, commissioner of public lands, commissioner of agriculture and forestry, superintendent of public works, superintendent of public instruction, commissioners of public instruction, auditor and deputy-auditor, surveyor, high sheriff, members of the board of health, board of prison inspectors, board of registration, inspectors of election, &c. All such officers are appointed for four years except the commissioners of public instruction and the members of the said boards, whose terms are as provided by the laws of the Territory; all must be citizens of the Territory. The judicial power is vested in a supreme court, 5 circuit courts, and 29 district courts, each having a jurisdiction corresponding to similar courts in each state in the Union; and, entirely distinct from these territorial courts, Hawaii has a United States district court. A Supplementary Act of the 3rd of March 1905 provides that writs of error and appeals may be taken from the Supreme Court of Hawaii to the Supreme Court of the United States “in all cases where the amount involved exclusive of costs or value exceeds the sum of five thousand dollars.” The Territory was without the forms of local government common to the United States until 1905, when the Territorial legislature divided it into five counties[8] without, however, giving to them the usual powers of taxation. Each county has the following officers: a board of supervisors, a clerk, a treasurer, an auditor, an assessor and tax-collector, a sheriff and coroner, and an attorney. The members (from five to nine) of the board of supervisors are elected by districts into which the county is divided, usually only one from each. All county officers are elected for a term of two years. The act of 1900 provides for the election of a delegate to Congress, and prescribes that the delegate shall have the qualifications necessary for membership in the Hawaiian Senate, and shall be elected by voters qualified to vote for members of the House of Representatives of Hawaii. As usual, the delegate has a right to take part in the debates in the national House of Representatives,

but may not vote.

Charities.—The principal public charity of the Territory is the leper asylum on a peninsula almost 10 sq. m. in area on the N. side of the island of Molokai. A steep precipice forms a natural wall between it and the rest of the island. The place became an asylum for lepers and the caring for them began to be a charity under government charge in 1866; but conditions here were at first unspeakably unhygienic, their improvement being largely due to Father Damien, who devoted himself to this work in 1873. The patients are almost exclusively native Hawaiians, and their number is slowly but steadily decreasing; in 1908 they numbered 791, and there were at Molokai 46 non-leprous helpers and 27 officers and assistants, including the Roman Catholic brothers and sisters in charge of the homes. In 1905 the United States government appropriated $100,000 for a hospital station and laboratory "for the study of the methods of transmission, cause and treatment of leprosy," and $50,000 a year for their maintenance; the station and laboratory to be established when the territorial government should have ceded to the United States a tract of 1 sq. m. on the leper reservation. The cession was made soon afterward by the territorial government. In 1907-1908 a home for non-leprous boys of leprous parents was established at Honolulu. Another public charity of Hawaii is the general free dispensary maintained by the territorial government at Honolulu.

Education.—Education is universal, compulsory and free. Every child between the ages of six and fifteen must attend either a public school or a duly authorized private school. Consequently the percentage of illiteracy is extremely low. The school system is essentially American in its text-books and in its methods, thanks to the foundations laid by American missionaries. Between 1820 and 1824 the missionaries taught about 2000 natives to read. Several important schools were founded before 1840, when the first written laws were published. Among these was a law providing for compulsory education, and decreeing that no illiterate born after the beginning of Liholiho's reign should hold office, and that no illiterate man or woman, born after the same date, could marry. The first Hawaiian minister of public instruction was the Rev. William Richards (1792-1847), who held office from 1843 to 1847, and was followed by Richard Armstrong (1805-1860), an American Presbyterian missionary, the father of General S. C. Armstrong. He laid stress on the importance of manual and industrial training during his term of office (1847-1855), and was succeeded by a board of education (1855-1865), of which he was first president; then an inspector-general of schools was appointed, Judge Abraham Fornander being the first inspector; in 1896 an executive department was created under a minister of public instruction and six commissioners; in 1900 a superintendent of public instruction was first appointed. English is by law the medium of instruction in all schools, both public and private, although other languages may be taught in addition. Formal instruction in Hawaiian ceased in 1898. The schools are in session forty weeks during the year. In 1908 there were 154 public schools with 18,564 pupils (27.06% of whom were Japanese, 20.89% Hawaiian, 13.54% part Hawaiian, 18.72% Portuguese and 10.63% Chinese) and 51 private schools with 4881 pupils. A normal school has been established at Honolulu, with a practice school attached to it. The territorial legislature of 1907 established the College of Agriculture and Mechanic Arts of the Territory of Hawaii, and also founded a public library. The Honolulu high school does excellent work and has beautiful buildings and grounds. The Lahainaluna Seminary on west Maui, founded in 1831 as a training school for teachers, furnishes instruction to Hawaiian boys in agriculture, carpentry, printing and mechanical drawing. The boys in the industrial school (1902) at Waialee, on the island of Oahu, are taught useful trades. The teaching of sewing in the public schools has met with great success, and a simple form of the Swedish sloid was introduced into many of the schools in 1894. Lace work was introduced into the public schools in 1903. But the best industrial instruction is furnished by the independent schools, among which the Kamehameha schools take the first place. They were founded by Mrs Bernice Pauahi Bishop (1831-1884), the last lineal descendant of Kamehameha I., who left her extensive landed estates in the hands of trustees for their support. They furnish a good manual and technical training to Hawaiian boys and girls, in addition to a primary and grammar school course of study, and exert a strong religious influence. There are six boarding schools for Hawaiian girls, supported by private resources. The most advanced courses of study are offered by Oahu College, which occupies a beautiful site near the beach just E. of Honolulu; it was founded in 1841 as the Punahou School for missionaries' children, and was chartered as Oahu College in 1852. It is well equipped with buildings and apparatus, and has an endowment of about $300,000.

Finance.—The revenue of the Territory for the fiscal year ending the 30th of June 1908 amounted to $2,669,748.32, of which $640,051.42 was the proceeds of the tax on real estate, $635,265.81 was the proceeds of the tax on personal property; and among the larger of the remaining items were the income tax ($266,241.74), waterworks ($141,898.04), public lands (sales, $37,585.75; revenue, $122,541.71) and licences ($206,374.28). On the 30th of June 1908 the bonded debt of the Territory was $3,979,000; there was on hand net cash, without floating debt, $677,648.48.

History.—The history of the islands before their discovery by Captain James Cook, in 1778, is obscure.[9] This famous navigator, who named the islands in honour of the earl of Sandwich, was received by the natives with many demonstrations of astonishment and delight; and offerings and prayers were presented to him by their priest in one of the temples; and though in the following year he was killed by a native when he landed in Kealakekua Bay in Hawaii, his bones were preserved by the priests and continued to receive offerings and homage from the people until the abolition of idolatry. At the time of Cook's visit the archipelago seems to have been divided into three distinct kingdoms: Hawaii; Oahu and Maui; and Lanai and Molokai. On the death of the chief who ruled Hawaii at that time there succeeded one named Kamehameha (1736-1819), who appears to have been a man of quick perception and great force of character. When Vancouver visited the islands in 1792, he left sheep and neat cattle,[10] protected by a ten years' taboo, and laid down the keel of a European ship for Kamehameha. Ten or twelve years later Kamehameha had 20 vessels (of 25 to 50 tons), which traded among the islands. He afterwards purchased others from foreigners. Having encouraged a warlike spirit in his people and having introduced firearms, Kamehameha attacked and overcame the chiefs of the other kingdoms one after another, until (in 1795) he became undisputed master of the whole group. He made John Young (*c.* 1775-1835) and Isaac Davis, Americans from one of the ships of Captain Metcalf which visited the island in 1789, his advisers, encouraged trade with foreigners, and derived from its profits a large increase of revenue as well as the means of consolidating his power. He died in 1819, and was succeeded by his son, Lilohilo, or Kamehameha II., a mild and well-disposed prince, but destitute of his father's energy. One of the first acts of Kamehameha II. was, for vicious and selfish reasons, to abolish taboo and idolatry throughout the islands. Some disturbances were caused thereby, but the insurgents were defeated.

On the 31st of March 1820 missionaries of the American Board of Commissioners for Foreign Missions—two clergymen, two teachers, a physician, a farmer, and a printer, each with his wife—and three Hawaiians educated in the Cornwall (Connecticut) Foreign Missionary School, arrived from America and began their labours at Honolulu. A short time afterwards the British government presented a small schooner to the king, and this

afforded an opportunity for the Rev. William Ellis, the well-known missionary, to visit Honolulu with a number of Christian natives from the Society Islands. Finding the language of the two groups nearly the same, Mr Ellis, who had spent several years in the southern islands, was able to assist the American missionaries in reducing the Hawaiian language to a written form. In 1825 the ten commandments were recognized by the king as the basis of a code of laws. In the years 1830-1845 the educational work of the American missionaries was so successful that hardly a native was unable to read and write. A law prohibiting drunkenness (1835) was followed in 1838 by a licence law and in 1839 by a law prohibiting the importation of spirits and taxing wines fifty cents a gallon; in 1840 another prohibitory law was enacted; but licence laws soon made the sale of liquor common. Missionary effort was particularly fruitful in Hilo, where Titus Coan (1801-1882), sent out in 1835 by the American Board of Commissioners for Foreign Missions, worked in repeated revivals, induced most of his church members to give up tobacco even, and received prior to 1880 more than 12,000 members into a church which became self-supporting and sent missions to the Gilbert Islands and the Marquesas. In 1823 Keopuolani, the king's mother, was baptized; and on a single Sunday in 1838 Coan baptized 1705 converts at Hilo. In 1864 the American Board withdrew its control of evangelical work.

In 1824 the king and queen of the Hawaiian Islands paid a visit to England, and both died there of measles. His successor, Kamehameha III. ruled from 1825 to 1854. In 1839 Kamehameha III. signed a Bill of Rights and in 1840 he promulgated the first constitution of the realm; in 1842 a code of laws was proclaimed; by 1848 the feudal system of land tenure was completely abolished; the first legislature met in 1845 and full suffrage was granted in 1852, but in 1864 suffrage was restricted. Progress was at times interrupted by the conduct of the officers of foreign powers. On one occasion (July 1839) French officers abrogated the laws (particularly against the importation of liquor), dictated treaties, extorted $20,000 and by force of arms procured privileges for Roman Catholic[11] priests in the country; and at another time (February 1843) a British officer, Captain Paulet of the "Carysfort," went so far as to take possession of Oahu and establish a commission for its government. The act of the British officer was disavowed by his superiors as soon as known.

These incidents led to a representation on the part of the native sovereign to the governments of Great Britain, France and the United States, and the independence of the islands (recognized by the United States in 1842) was recognized in 1844 by France and Great Britain. In 1844 John Ricord, an American lawyer, became the first minister of foreign affairs. A new constitution came into effect in 1852. It was the aim of Kamehameha III. and his advisers to combine the native and the foreign elements under one government; to make the king the sovereign not of one race or class, but of all; and to extend equal and impartial laws over all inhabitants of the country. Kamehameha IV. and his queen, Emma, ruled from 1855 to 1863 and were succeeded by his brother, Kamehameha V., who died in 1872, and in whose reign a third (and a reactionary) constitution went into effect in 1864, by mere royal proclamation. Lunalilo, a grandson of Kamehameha I., was king for two years, and in 1874, backed by American influence, Kalakaua was elected his successor, in preference to Queen Emma, a member of the Anglican Church and the candidate of the pro-British party. Kalakaua considered residents of European or American descent as alien invaders, and he aimed to restore largely the ancient system of personal government, under which he should have control of the public treasury. On the 2nd of July 1878, and again on the 14th of August 1880, he dismissed a ministry without assigning any reason, after it had been triumphantly sustained by a test vote of the legislature. On the latter occasion he appointed C. C. Moreno, who had come to Honolulu in the interest of a Chinese steamship company, as Premier and minister of foreign affairs. This called forth the protest of the representatives of Great Britain, France and the United States, and aroused such opposition on the part of both the foreigners and the better class of natives that the king was obliged, after four days of popular excitement, to remove the obnoxious minister. During the king's absence on a tour round the world in 1881, his sister, Mrs Lydia Dominis (b. 1838), also styled Liliuokalani, acted as regent. After his return the contest was renewed between the so-called National party, which favoured absolution, and the Reform party, which sought to establish parliamentary government. The king took an active part in the elections, and used his patronage to the utmost to influence legislation. For three successive sessions a majority of the legislature was composed of office-holders, dependent on the favour of the executive. Among the measures urged by the king and opposed by the Reform party were the project of a ten-million dollar loan, chiefly for military purposes; the removal of the prohibition of the sale of alcoholic liquor to Hawaiians, which was carried in 1882; the licensing of the sale of opium; the chartering of a lottery company; the licensing of kahunas, or medicine men, &c. Systematic efforts were made to turn the constitutional question into a race issue, and the party cry was raised of "Hawaii for Hawaiians." Adroit politicians flattered the king's vanity, defended his follies and taught him how to violate the spirit of the constitution while keeping the letter of the law. From 1882 till 1887 his prime minister was Walter Murray Gibson (1823-1888), a singular and romantic genius, a visionary adventurer and a shrewd politician, who had been imprisoned by the Dutch government in Batavia in 1852 on a charge of inciting insurrection in Sumatra, and had arrived at Honolulu in 1861 with the intention of leading a Mormon colony to the East Indies. To exalt his royal dignity, which was lowered, he thought, by his being only an elected king, Kalakaua caused himself to be crowned with imposing ceremonies on the ninth anniversary of his election (Feb. 12, 1883).

Kalakaua was now no longer satisfied with being merely king of Hawaii, but aspired to what was termed the "Primacy of the Pacific." Accordingly Mr Gibson addressed a protest to the great powers, deprecating any further annexation of the islands of the Pacific Ocean, and claiming for Hawaii the exclusive right "to assist them in improving their political and social condition." In pursuance of this policy, two commissioners were sent to the Gilbert Islands in 1883 to prepare the way for a Hawaiian protectorate. On the 23rd of December 1886 Mr J. E. Bush was commissioned as minister plenipotentiary to the king of Samoa, the king of Tonga and the other independent chiefs of Polynesia. He arrived in Samoa on the 3rd of January 1887, and remained there six months, during which time he concluded a treaty of alliance with Malietoa, which was ratified by his government. The "Explorer," a steamer of 170 tons, which had been employed in the copra trade, was purchased for $20,000, and refitted as a man-of-war, to form the "nest-egg" of the future Hawaiian navy. She was renamed the "Kaimiloa," and was despatched to Samoa on the 17th of May 1887 to strengthen the hands of the embassy. As R. L. Stevenson wrote: "The history of the 'Kaimiloa' is a story of debauchery, mutiny and waste of government property." At length the intrigues of the Hawaiian embassy gave umbrage to the German government, and it was deemed prudent to recall it to Honolulu in July 1887. Meanwhile a reform league had been formed to stop the prevailing misrule and extravagance; it was supported by a volunteer military force, the "Honolulu Rifles." The king carried through the legislature of 1886 a bill for an opium licence, as well as a Loan Act, under which a million dollars were borrowed in London. Under his influence the Hale Naua Society was organized in 1886 for the spread of idolatry and king-worship; and in the same year a "Board of Health" was formed which revived the vicious practices of the *kahunas* or medicine-men.

The king's acceptance of two bribes—one of $75,000 and another of $80,000 for the assignment of an opium licence—precipitated the revolution of 1887. An immense mass meeting was held on the 30th of June, which sent a committee to the king with specific demands for radical reforms. Finding himself without support, he yielded without a struggle, dismissed his ministry and signed a constitution on the 7th of July 1887, revising that of 1864, and intended to put an end to personal government and to make the cabinet responsible only to the legislature; this was called the "bayonet constitution," because it was so largely the result of the show of force made by the Honolulu Rifles. By its terms office-holders were made ineligible for seats in the legislature, and no member of the legislature could be appointed to any civil office under the government during the term for which he had been elected. The members of the Upper House, instead of being appointed by the king for life, were henceforth to be elected for terms of six years by electors possessing a moderate property qualification. The remainder of Kalakaua's reign teemed with intrigues and conspiracies to restore autocratic rule. One of these came to a head on the 30th of July 1889, but this "Wilcox rebellion," led by R. W. Wilcox, a half-breed, educated in Italy, and a friend of the king and of his sister, was promptly suppressed. Seven of the insurgents were killed and a large number wounded. For his health the king visited California in the United States cruiser "Charleston" in November 1890, and died on the 20th of January 1891 in San Francisco. On the 29th of January at noon his sister, the regent, took the oath to maintain the constitution of 1887, and was proclaimed queen, under the title of Liliuokalani.

The history of her reign shows that it was her constant purpose to restore autocratic government. The legislative session of 1892, during which four changes of ministry took place, was protracted to eight months chiefly by her determination to carry through the opium and lottery bills and to have a pliable cabinet. She had a new constitution drawn up, practically providing for an absolute monarchy, and disfranchising a large class of citizens who had voted since 1887; this constitution (drawn up, so the royal party declared, in reply to a petition signed by thousands of natives) she undertook to force on the country after proroguing the legislature on the 14th of January 1893, but her ministers shrank from the responsibility of so revolutionary an act, and with difficulty prevailed upon her to postpone the execution of her design. An uprising similar to that of 1887 declared the monarchy forfeited by its own act. A third party proposed a regency during the minority of the heir-apparent, Princess Kaiulani, but in her absence this scheme found few supporters. A Committee of Safety was appointed at a public meeting, which formed a provisional government and reorganized the volunteer military companies, which had been disbanded in 1890. Its leading spirits were the "Sons of Missionaries" (as E. L. Godkin styled them), who were accused of using their knowledge of local affairs and their inherited prestige among the natives for private ends—of founding a "Gospel Republic" which was actually a business enterprise. The provisional government called a mass meeting of citizens, which met on the afternoon of the 6th and ratified its action. The United States steamer "Boston," which had unexpectedly arrived from Hilo on the 14th, landed a small force on the evening of the 16th, at the request of the United States minister, Mr J. L. Stevens, and a committee of residents, to protect the lives and property of American citizens in case of riot or incendiarism. On the 17th the Committee of Safety took possession of the government building, and issued a proclamation declaring a monarchy to be abrogated, and establishing a provisional government, to exist "until terms of union with the United States of America shall have been negotiated and agreed upon." Meanwhile two companies of volunteer troops arrived and occupied the grounds. By the advice of her ministers, and to avoid bloodshed, the queen surrendered under protest, in view of the landing of United States troops, appealing to the government of the United States to reinstate her in authority. A treaty of annexation was negotiated with the United States during the next month, just before the close of President Benjamin Harrison's administration, but it was withdrawn on the 9th of March 1893 by President Harrison's successor, President Cleveland, who then despatched James H. Blount (1837-1903) of Macon, Georgia, as commissioner paramount, to investigate the situation in the Hawaiian Islands. On receiving Blount's report to the effect that the revolution had been accomplished by the aid of the United States minister and by the landing of troops from the "Boston," President Cleveland sent Albert Sydney Willis (1843-1897) of Kentucky to Honolulu with secret instructions as United States minister. Willis with much difficulty and delay obtained the queen's promise to grant an amnesty, and made a formal demand on the provisional government for her reinstatement on the 19th of December 1893. On the 23rd President Sanford B. Dole sent a reply to Willis, declining to surrender the authority of the provisional government to the deposed queen. The United States Congress declared against any further intervention by adopting on the 31st of May 1894 the Turpie Resolution. On the 30th of May 1894 a convention was held to frame a constitution for the republic of Hawaii, which was proclaimed on the 4th of July following, with S. B. Dole as its first president. Toward the end of the same year a plot was formed to overthrow the republic and to restore the monarchy. A cargo of arms and ammunition from San Francisco was secretly landed at a point near Honolulu, where a company of native royalists were collected on the 6th of January 1895, intending to capture the government buildings by surprise that night, with the aid of their allies in the city. A premature encounter with a squad of police alarmed the town and broke up their plans. There were several other skirmishes during the following week, resulting in the capture of the leading conspirators, with most of their followers. The ex-queen, on whose premises arms and ammunition and a number of incriminating documents were found, was arrested and was imprisoned for nine months in the former palace. On the 24th of January 1895 she formally renounced all claim to the throne and took the oath of allegiance to the republic. The ex-queen and forty-eight others were granted conditional pardon on the 7th of September, and on the following New Year's Day the remaining prisoners were set at liberty.

On the inauguration of President McKinley, in March 1897, negotiations with the United States were resumed, and on the 16th of June a new treaty of annexation was signed at Washington. As its ratification by the Senate had appeared to be uncertain, extreme measures were taken: the Newlands joint resolution, by which the cession was "accepted, ratified and confirmed," was passed by the Senate by a vote of 42 to 21 and by the House of Representatives by a vote of 209 to 91, and was signed by the president on the 7th of July 1898. The formal transfer of sovereignty took place on the 12th of August 1898, when the flag of the United States (the same flag hauled down by order of Commissioner Blount) was raised over the Executive Building with impressive ceremonies.

The sovereigns of the monarchy, the president of the republic and the governors of the Territory up to 1910 were as follows: Sovereigns: Kamehameha I., 1795-1819; Kamehameha II., 1819-1824; Kaahumanu (regent), 1824-1832; Kamehameha III., 1832-1854; Kamehameha IV., 1855-1863; Kamehameha V., 1863-1872; Lunalilo, 1873-1874; Kalakaua, 1874-1891; Liliuokalani, 1891-1893. President: Sanford B. Dole, 1893-1898. Governors: S. B. Dole, 1898-1904; George R. Carter, 1904-1907; W. F. Frear, 1907.

AUTHORITIES.—Consult the bibliography in Adolf Marcuse, *Die hawaiischen Inseln* (Berlin, 1894); A. P. C. Griffen,

List of Books relating to Hawaii (Washington, 1898); C. E. Dutton, *Hawaiian Volcanoes*, in the fourth annual report of the United States Geological Survey (Washington, 1884); J. D. Dana, *Characteristics of Volcanoes with Contribution of Facts and Principles from the Hawaiian Islands* (New York, 1890); W. H. Pickering, *Lunar and Hawaiian Physical Features compared* (1906); C. H. Hitchcock, *Hawaii and its Volcanoes* (Honolulu, 1909); Augustin Kramer, *Hawaii, Ostmikronesien und Samoa* (Stuttgart, 1906); Sharp, *Fauna* (London, 1899); Walter Maxwell, *Lavas and Soils of the Hawaiian Islands* (Honolulu, 1898); W. Hillebrand, *Flora of the Hawaiian Islands* (London, 1888); G. P. Wilder, *Fruits of the Hawaiian Islands* (3 vols., Honolulu, 1907); H. W. Henshaw, *Birds of the Hawaiian Islands* (Washington, 1902); A. Fornander, *Account of the Polynesian Race and the Ancient History of the Hawaiian People to the Times of Kamehameha I.* (3 vols., London, 1878-1885); W. D. Alexander, *A Brief History of the Hawaiian People* (New York, 1899); C. H. Forbes-Lindsay, *American Insular Possessions* (Philadelphia, 1906); José de Olivares, *Our Islands and their People* (New York, 1899); J. A. Owen, *Story of Hawaii* (London, 1898); E. J. Carpenter, *America in Hawaii* (Boston, 1899); W. F. Blackman, *The Making of Hawaii, a Study in Social Evolution* (New York, 1899), with bibliography; T. G. Thrum, *Hawaiian Almanac and Annual* (Honolulu); Lucien Young, *The Real Hawaii* (New York, 1899), written by a lieutenant of the "Boston," an ardent defender of Stevens; Liliuokalani, *Hawaii's Story* (Boston, 1898); C. T. Rodgers, *Education in the Hawaiian Islands* (Honolulu, 1897); Henry E. Chambers, *Constitutional History of Hawaii* (Baltimore, 1896), in *Johns Hopkins University Studies*; W. Ellis, *Tour Around Hawaii* (London, 1829); J. J. Jarves, *History of the Sandwich Islands* (Honolulu, 1847); H. Bingham, *A Residence of Twenty-one Years in the Sandwich Islands* (Hartford, 1848); Isabella Bird, *Six Months in the Sandwich Islands* (New York, 1881); Adolf Bastian, *Zur Kenntnis Hawaiis* (Berlin, 1883); the annual *Reports* of the governor of Hawaii, of the Hawaii Agricultural Experiment Station, of the Hawaiian Sugar Planters' Experiment Station, of the Board of Commissioners on Agriculture and Forestry, and of the Hawaii Promotion Committee; and the *Papers of the Hawaiian Historical Society*.

---

1 Among the minor phenomena of Hawaiian volcanoes are the delicate glassy fibres called Pele's hair by the Hawaiians, which are spun by the wind from the rising and falling drops of liquid lava, and blown over the edge or into the crevices of the crater. Pele in idolatrous times was the dreaded goddess of Kilauea.

2 The Chinese name for the Hawaiian Islands means "Sandalwood Islands."

3 Partly described by T. S. Streets, *Contributions to the Natural History of the Hawaiian and Fanning Islands*, Bulletin 7 of U.S. National Museum (Washington, 1877). Several new species are described in U.S. Bureau of Fisheries Document, No. 623 (Washington, 1907).

4 So Lesson called the family from the native name in 1831; Cabanis (1847) suggested *Acrulocercus*.

5 The entomological department of the Hawaii Experiment Station undertakes "mosquito control," and in 1905-1906 imported top-minnows (*Poeciliidae*) to destroy mosquito larvae.

6 These and other title-holders received corresponding rights to the use of irrigation ditches, and to fish in certain sea areas adjacent to their holdings.

7 Large numbers of Japanese immigrants have used the Hawaiian Islands merely as a means of gaining admission at the mainland ports of the United States. For, as the Japanese government would issue only a limited number of passports to the mainland but would quite readily grant passports to Honolulu, the latter were accepted, and after a short stay on some one of the islands the immigrants would depart on a "coastwise" voyage to some mainland port. The increasing numbers arriving by this means, however, provoked serious hostility in the Pacific coast states, especially in San Francisco, and to remedy the difficulty Congress inserted a clause in the general immigration act of the 20th of February 1907 which provides that whenever the president is satisfied that passports issued by any foreign government to any other country than the United States, or to any of its insular possessions, or to the Canal Zone, "are being used for the purpose of enabling the holders to come to the continental territory of the United States to the detriment of labour conditions therein," he may refuse to admit them. This provision has been successful in reducing the number of Japanese coming to the mainland from Hawaii.

8 These are: the county of Hawaii, consisting of the island of the same name; the county of Maui, including the islands of Maui, Lanai and Kahoolawe, and the greater part of Molokai; the county of Kalawao, being the leper settlement on Molokai; the city and county of Honolulu (created from the former county of Oahu by an act of 1907, which came into effect in 1909), consisting of the island of Oahu and various small islands, of which the only ones of any importance are the Midway Islands, 1232 m. from Honolulu, a Pacific cable relay station and a post of the U.S. navy marines; and the county of Kauai, including Kauai and Niihau islands.

9 Their discovery in the 16th century (in 1542 or 1555 by Juan Gaetan, or in 1528 when two of the vessels of Alvaro de Saavedra were shipwrecked here and the captain of one, with his sister, survived and intermarried with the natives) seems probable, because there are traces of Spanish customs in the islands; and they are marked in their correct latitude on an English chart of 1687, which is apparently based on Spanish maps; a later Spanish chart (1743) gives a group of islands 10° E. of the true position of the Hawaiian Islands.

10 The first horses were left by Captain R. J. Cleveland in 1803.

11 The first Roman Catholic priests came in 1827 and were banished in 1831, but returned in 1837. An edict of toleration in 1839 shortly preceded the visit of the "Artemise."

HAWARDEN (pronounced Harden, Welsh *Penarlâg*), a market-town of Flintshire, North Wales, 6 m. W. of Chester, on a height commanding an extensive prospect, connected by a branch with the London & North-Western railway. Pop. (1901), 5372. It lies in a coal district, with clay beds near. Coarse earthenware, draining tiles and fire-clay bricks are the chief manufactures. The Maudes take the title of viscount from the town. Hawarden castle—built in 1752, added to and altered in the Gothic style in 1814—stands in a fine wooded park near the old castle of the same name, which William the Conqueror gave to his nephew, Hugh Lupus. It was taken in 1282 by Dafydd, brother of Llewelyn, prince of Wales, destroyed by the Parliamentarians in the Civil War, and came into the possession of Sergeant Glynne, lord chief justice of England under Cromwell. The last baronet, Sir Stephen R. Glynne, dying in 1874, Castell Penarlâg passed to his brother-in-law, William Ewart Gladstone. St Deiniol church, early English, was restored in 1857 and 1878. There are also a grammar school (1606), a Gladstone golden-wedding fountain (1889), and St Deiniol's Hostel (with accommodation for students and an Anglican clerical warden); west of the church, on Truman's hill, is an old British camp.

HAWAWIR (Hauhauin), an African tribe of Semitic origin, dwelling in the Bayuda desert, Anglo-Egyptian Sudan. They are found along the road from Debba to Khartum as far as Bir Ganir, and from Ambigol to Wadi Bishāra. They have adopted none of the negro customs, such as gashing the cheeks or elaborate hairdressing. They own large herds of oxen, sheep and camels.

HAWEIS, HUGH REGINALD (1838-1901), English preacher and writer, was born at Egham, Surrey, on the 3rd of April 1838. On leaving Trinity College, Cambridge, he travelled in Italy and served under Garibaldi in 1860. On his return to England he was ordained and held various curacies in London, becoming in 1866 incumbent of St James's, Marylebone. His unconventional methods of conducting the service, combined with his dwarfish figure and lively manner, soon attracted crowded congregations. He married Miss M. E. Joy in 1866, and both he and Mrs Haweis (d. 1898) contributed largely to periodical literature and travelled a good deal abroad. Haweis was Lowell lecturer at Boston, U.S.A., in 1885, and represented the Anglican Church at the Chicago Parliament of Religions in 1893. He was much interested in music, and wrote books on violins and church bells, besides contributing an article to the 9th edition of the *Encyclopaedia Britannica* on bell-ringing. His best-known book was *Music and Morals* (3rd ed., 1873); and for a time he was editor of *Cassell's Magazine*. He also wrote five volumes on *Christ and Christianity* (a popular church history, 1886-1887). Other writings include *Travel and Talk* (1896), and similar chatty and entertaining books. He died on the 29th of January 1901.

HAWES, STEPHEN (fl. 1502-1521), English poet, was probably a native of Suffolk, and, if his own statement of his age may be trusted, was born about 1474. He was educated at Oxford, and travelled in England, Scotland and France. On his return his various accomplishments, especially his "most excellent vein" in poetry, procured him a place at court. He was groom of the chamber to Henry VII. as early as 1502. He could repeat by heart the works of most of the English poets, especially the poems of John Lydgate, whom he called his master. He was still living in 1521, when it is stated in Henry VIII.'s household accounts that £6. 13s. 4d. was paid "to Mr Hawes for his play," and he died before 1530, when Thomas Field, in his "Conversation between a Lover and a Jay," wrote "Yong Steven Hawse, whose soule God pardon, Treated of love so clerkly and well." His capital work is *The Passetyme of Pleasure, or the History of Graunde Amour and la Bel Pucel, conteining the knowledge of the Seven Sciences and the Course of Man's Life in this Worlde,* printed by Wynkyn de Worde, 1509, but finished three years earlier. It was also printed with slightly varying titles by the same printer in 1517, by J. Wayland in 1554, by Richard Tottel and by John Waley in 1555. Tottel's edition was edited by T. Wright and reprinted by the Percy Society in 1845. The poem is a long allegory in seven-lined stanzas of man's life in this world. It is divided into sections after the manner of the Morte Arthur and borrows the machinery of romance. Its main motive is the education of the knight, Graunde Amour, based, according to Mr W. J. Courthope (*Hist. of Eng. Poetry*, vol. i. 382), on the *Marriage of Mercury and Philology*, by Martianus Capella, and the details of the description prove Hawes to have been well acquainted with medieval systems of philosophy. At the suggestion of Fame, and accompanied by her two greyhounds, Grace and Governance, Graunde Amour starts out in quest of La Bel Pucel. He first visits the Tower of Doctrine or Science where he acquaints himself with the arts of grammar, logic, rhetoric and arithmetic. After a long disputation with the lady in the Tower of Music he returns to his studies, and after sojourns at the Tower of Geometry, the Tower of Doctrine, the Castle of Chivalry, &c., he arrives at the Castle of La Bel Pucel, where he is met by Peace, Mercy, Justice, Reason and Memory. His happy marriage does not end the story, which goes on to tell of the oncoming of Age, with the concomitant evils of Avarice and Cunning. The admonition of Death brings Contrition and Conscience, and it is only when Remembraunce has delivered an epitaph chiefly dealing with the Seven Deadly Sins, and Fame has enrolled Graunde Amour's name with the knights of antiquity, that we are allowed to part with the hero. This long imaginative poem was widely read and esteemed, and certainly exercised an influence on the genius of Spenser.

The remaining works of Hawes are all of them bibliographical rarities. *The Conversyon of Swerers* (1509) and *A Joyfull Medytacyon to all Englonde*, a coronation poem (1509), was edited by David Laing for the Abbotsford Club (Edinburgh, 1865). A *Compendyous Story ... called the Example of Vertu* (pr. 1512) and the *Comfort of Lovers* (not dated) complete the list of his extant work.

See also G. Saintsbury, *The Flourishing of Romance and the Rise of Allegory* (Edin. and Lond., 1897); the same writer's *Hist. of English Prosody* (vol. i. 1906); and an article by W. Murison in the *Cambridge History of English Literature* (vol. ii. 1908).

HAWES, WILLIAM (1785-1846), English musician, was born in London in 1785, and was for eight years (1793-1801) a chorister of the Chapel Royal, where he studied music chiefly under Dr Ayrton. He subsequently held various musical posts, being in 1817 appointed master of the children of the Chapel Royal. He also carried on the business of a music publisher, and was for many years musical director of the Lyceum theatre, then devoted to English opera. In the last-named capacity (July 23rd, 1824), he introduced Weber's *Der Freischütz* for the first time in England, at first slightly curtailed, but soon afterwards in its entirety. Winter's *Interrupted Sacrifice*,

Mozart's *Cosi fan tutte*, Marschner's *Vampyre* and other important works were also brought out under his auspices. Hawes also wrote or compiled the music for numerous pieces. Better were his glees and madrigals, of which he published several collections. He also superintended a new edition of the celebrated *Triumph of Oriana*. He died on the 18th of February 1846.

HAWFINCH, a bird so called from the belief that the fruit of the hawthorn (*Crataegus Oxyacantha*) forms its chief food, the *Loxia coccothraustes* of Linnaeus, and the *Coccothraustes vulgaris* of modern ornithologists, one of the largest of the finch family (*Fringillidae*), and found over nearly the whole of Europe, in Africa north of the Atlas and in Asia from Palestine to Japan. It was formerly thought to be only an autumnal or winter-visitor to Britain, but later experience has proved that, though there may very likely be an immigration in the fall of the year, it breeds in nearly all the English counties to Yorkshire, and abundantly in those nearest to London. In coloration it bears some resemblance to a chaffinch, but its much larger size and enormous beak make it easily recognizable, while on closer inspection the singular bull-hook form of some of its wing-feathers will be found to be very remarkable. Though not uncommonly frequenting gardens and orchards, in which as well as in woods it builds its nest, it is exceedingly shy in its habits, so as seldom to afford opportunities for observation.

(A. N.)

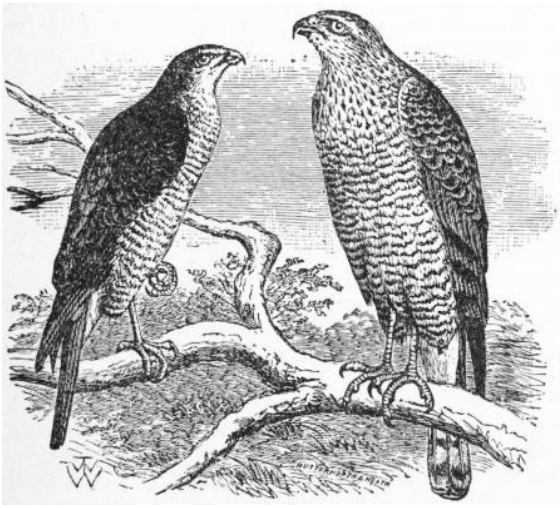
HAWICK, a municipal and police burgh of Roxburghshire, Scotland. Pop. (1891), 19,204; (1901), 17,303. It is situated at the confluence of the Slitrig (which flows through the town) with the Teviot, 10 m. S.W. of Jedburgh by road and 52¾ m. S.E. of Edinburgh by the North British railway. The name has been derived from the O. Eng. *heaih-wic*, "the village on the flat meadow," or *haga-wic*, "the fenced-in dwelling," the Gadeni being supposed to have had a settlement at this spot. Hawick is a substantial and flourishing town, the prosperity of which dates from the beginning of the 19th century, its enterprise having won for it the designation of "The Glasgow of the Borders." The municipal buildings, which contain the free library and reading-room, stand on the site of the old town hall. The Buccleuch memorial hall, commemorating the 5th duke of Buccleuch, contains the Science and Art Institute and a museum rich in exhibits illustrating Border history. The Academy furnishes both secondary and technical education. The only church of historical interest is that of St Mary's, the third of the name, built in 1763. The first church, believed to have been founded by St Cuthbert (d. 687), was succeeded by one dedicated in 1214, which was the scene of the seizure of Sir Alexander Ramsay of Dalhousie in 1342 by Sir William Douglas. The modern Episcopal church of St Cuthbert was designed by Sir Gilbert Scott. The Moat or Moot hill at the south end of the town—an earthen mound 30 ft. high and 300 ft. in circumference—is conjectured to have been the place where formerly the court of the manor met; though some authorities think it was a primitive form of fortification. The Baron's Tower, founded in 1155 by the Lovels, lords of Branxholm and Hawick, and afterwards the residence of the Douglases of Drumlanrig, is said to have been the only building that was not burned down during the raid of Thomas Radcliffe, 3rd earl of Sussex, in April 1570. At a later date it was the abode of Anne, duchess of Buccleuch and Monmouth, after the execution of her husband, James, duke of Monmouth in 1585, and finally became the Tower Hotel. Bridges across the Teviot connect Hawick with the suburb of Wilton, in which a public park has been laid out, and St Leonard's Park and race-course are situated on the Common, 2 m. S.W. The town is governed by a provost, bailies and council, and unites with Selkirk and Galashiels (together known as the Border burghs) to send a member to parliament. The leading industries are the manufacture of hosiery, established in 1771, and woollens, dating from 1830, including blankets, shepherd's plaiding and tweeds. There are, besides, tanneries, dye works, oil-works, saw-mills, iron-founding and engineering works, quarries and nursery gardens. The markets for live stock and grain are also important.

In 1537 Hawick received from Sir James Douglas of Drumlanrig a charter which was confirmed by the infant Queen Mary in 1545, and remained in force until 1861, when the corporation was reconstituted by act of parliament. Owing to its situation Hawick was often imperilled by Border warfare and marauding freebooters. Sir Robert Umfraville (d. 1436), governor of Berwick, burned it about 1417, and in 1562 the regent Moray had to suppress the lawless with a strong hand. Neither of the Jacobite risings aroused enthusiasm. In 1715 the discontented Highlanders mutinied on the Common, 500 of them abandoning their cause, and in 1745 Prince Charles Edward's cavalry passed southward through the town. In 1514, the year after the battle of Flodden, in which the burghers had suffered severely, a number of young men surprised an English force at Hornshole, a spot on the Teviot 2 m. below the town, routed them and bore away their flag. This event is celebrated every June in the ceremony of "Riding the Common"—in which a facsimile of the captured pennon is carried in procession to the accompaniment of a chorus "Teribus, ye Teri Odin," supposed to be an invocation to Thor and Odin—a survival of Northumbrian paganism. Two of the most eminent natives of the burgh were Dr Thomas Somerville (1741-1830), the historian, and James Wilson (1805-1860), founder of the *Economist* newspaper and the first financial member of the council for India.

Minto House, 5 m. N.E., is the seat of the earl of Minto. Denholm, about midway between Hawick and Jedburgh, was the birthplace of John Leyden the poet. The cottage in which Leyden was born is now the property of the Edinburgh Border Counties Association, and a monument to his memory has been erected in the centre of Denholm green. Cavers, nearer Hawick, was once the home of a branch of the Douglases, and it is said that in Cavers House are still preserved the pennon that was borne before the Douglas at the battle of Otterburn (Chevy Chase), and the gauntlets that were then taken from the Percy (1388). Two m. S.W. of Hawick is the massive peel of Goldielands—the "watch-tower of Branxholm," a well-preserved typical Border stronghold. One mile beyond it, occupying a commanding site on the left bank of the Teviot, stands Branxholm Castle, the Branksome Hall of *The Lay of the Last Minstrel*, once owned by the Lovels, but since the middle of the 15th century the property of the Scotts of Buccleuch, and up to 1756 the chief seat of the duke. It suffered repeatedly in English invasions and was destroyed in 1570. It was rebuilt next year, the peel, finished five years later, forming part of the modern mansion. About 3 m. W. of Hawick, finely situated on high ground above Harden Burn, a left-hand affluent of

Borthwick Water, is Harden, the home of Walter Scott (1550-1629), an ancestor of the novelist.

HAWK (O. Eng. *hafoc* or *heafoc*, a common Teutonic word, cf. Dutch *havik*, Ger. *Habicht*; the root is *hab-*, *haf-*, to hold, cf. Lat. *accipiter*, from *capere*), a word of somewhat indefinite meaning, being often used to signify all diurnal birds-of-prey which are neither vultures nor eagles, and again more exclusively for those of the remainder which are not buzzards, falcons, harriers or kites. Even with this restriction it is comprehensive enough, and will include more than a hundred species, which have been arrayed in genera varying in number from a dozen to above a score, according to the fancy of the systematizer. Speaking generally, hawks may be characterized by possessing comparatively short wings and long legs, a bill which begins to decurve directly from the cere (or soft bare skin that covers its base), and has the cutting edges of its maxilla (or upper mandible) sinuated[1] but never notched. To these may be added as characters, structurally perhaps of less value, but in other respects quite as important, that the sexes differ very greatly in size, that in most species the irides are yellow, deepening with age into orange or even red, and that the immature plumage is almost invariably more or less striped or mottled with heart-shaped spots beneath, while that of the adults is generally much barred, though the old males have in many instances the breast and belly quite free from markings. Nearly all are of small or moderate size—the largest among them being the gos-hawk (*q.v.*) and its immediate allies, and the male of the smallest, *Accipiter tinus*, is not bigger than a song-thrush. They are all birds of great boldness in attacking a quarry, but if foiled in the first attempts they are apt to leave the pursuit. Thoroughly arboreal in their habits, they seek their prey, chiefly consisting of birds (though reptiles and small mammals are also taken), among trees or bushes, patiently waiting for a victim to shew itself, and gliding upon it when it appears to be unwary with a rapid swoop, clutching it in their talons, and bearing it away to eat it in some convenient spot. 95



European Sparrow-Hawk (Male and Female).

Systematic ornithologists differ as to the groups into which the numerous forms known as hawks should be divided. There is at the outset a difference of opinion as to the scientific name which the largest and best known of these groups should bear—some authors terming it *Nisus*, and others, who seem to have the most justice on their side, *Accipiter*. In Europe there are two species—first, *A. nisus*, the common sparrow-hawk, which has a wide distribution from Ireland to Japan, extending also to northern India, Egypt and Algeria, and secondly, *A. brevipes* (by some placed in the group *Micronisus* and by others called an *Astur*), which only appears in the south-east and the adjoining parts of Asia Minor and Persia. In North America the place of the former is taken by two very distinct species, a small one, *A. fuscus*, usually known in Canada and the United States as the sharp-shinned hawk, and Stanley's or Cooper's hawk, *A. cooperi* (by some placed in another genus, *Cooperastur*), which is larger and has not so northerly a range. In South America there are four or five more, including *A. tinus*, before mentioned as the smallest of all, while a species not much larger, *A. minullus*, together with several others of greater size, inhabits South Africa. Madagascar and its neighbouring islands have three or four species sufficiently distinct, and India has *A. badlus*. A good many more forms are found in south-eastern Asia, in the Indo-Malay Archipelago, and in Australia three or four species, of which *A. cirrhocephalus* most nearly represents the sparrow-hawk of Europe and northern Asia, while *A. radiatus* and *A. approximans* show some affinity to the gos-hawks (*Astur*) with which they are often classed. The differences between all the forms above named and the much larger number here unnamed are such as can be only appreciated by the specialist. The so-called "sparrow-hawk" of New Zealand (*Hieracidea*) does not belong to this group of birds at all, and by many authors has been deemed akin to the falcons. For hawking see Falconry.

(A. N.)

1 In one form, *Nisoides*, which on that account has been generically separated, they are said to be perfectly straight.

HAWKE, EDWARD HAWKE, Baron (1705-1781), British admiral, was the only son of Edward Hawke, a barrister. On his mother's side he was the nephew of Colonel Martin Bladen (1680-1746), a politician of some note, and was connected with the family of Fairfax. Edward Hawke entered the navy on the 20th of February

1720 and served the time required to qualify him to hold a lieutenant's commission on the North American and West Indian stations. Though he passed his examination on the 2nd of June 1725, he was not appointed to a ship to act in that rank till 1729, when he was named third lieutenant of the "Portland" in the Channel. The continuance of peace allowed him no opportunities of distinction, but he was fortunate in obtaining promotion as commander of the "Wolf" sloop in 1733, and as post captain of the "Flamborough" (20) in 1734. When war began with Spain in 1739, he served as captain of the "Portland" (50) in the West Indies. His ship was old and rotten. She nearly drowned her captain and crew, and was broken up after she was paid off in 1742. In the following year Hawke was appointed to the "Berwick" (70), a fine new vessel, and was attached to the Mediterranean fleet then under the command of Thomas Mathews. The "Berwick" was manned badly, and suffered severely from sickness, but in the ill-managed battle of Toulon on the 11th of January 1744 Hawke gained great distinction by the spirit with which he fought his ship. The only prize taken by the British fleet, the Spanish "Poder" (74), surrendered to him, and though she was not kept by the admiral, Hawke was not in any degree to blame for the loss of the only trophy of the fight. His gallantry attracted the attention of the king. There is a story that he was dismissed from the service for having left the line to engage the "Poder," and was restored by the king's order. The legend grew not unnaturally out of the confusing series of courts martial which arose out of the battle, but it has no foundation. There is better reason to believe that when at a later period the Admiralty intended to pass over Hawke's name in a promotion of admirals, the king, George II., did insist that he should not be put on the retired list.

He had no further chance of making his energy and ability known out of the ranks of his own profession, where they were fully realized, till 1747. In July of that year he attained flag rank, and was named second in command of the Channel fleet. Owing to the ill health of his superior he was sent in command of the fourteen ships detached to intercept a French convoy on its way to the West Indies. On the 14th of October 1747 he fell in with it in the Bay of Biscay. The French force, under M. Desherbiers de l'Étenduère, consisted of nine ships, which were, however, on the average larger than Hawke's. He attacked at once. The French admiral sent one of his liners to escort the merchant ships on their way to the West Indies, and with the other eight fought a very gallant action with the British squadron. Six of the eight French ships were taken. The French admiral did for a time succeed in saving the trading vessels under his charge, but most of them fell into the hands of the British cruisers in the West Indies. Hawke was made a knight of the Bath for this timely piece of service, a reward which cannot be said to have been lavish.

In 1747 Hawke had been elected M.P. for Portsmouth, which he continued to represent for thirty years, though he can seldom have been in his place, and it does not appear that he often spoke. A seat in parliament was always valuable to a naval officer at that time, since it enabled him to be useful to ministers, and increased his chances of obtaining employment. Hawke had married a lady of fortune in Yorkshire, Catherine Brook, in 1737, and was able to meet the expenses entailed by a seat in parliament, which were considerable at a time when votes were openly paid for by money down. In the interval between the war of the Austrian Succession and the Seven Years' War, Hawke was almost always on active service. From 1748 till 1752 be was in command at home, and he rehoisted his flag in 1755 as admiral in command of the Western Squadron. Although war was not declared for some time, England and France were on very hostile terms, and conflicts between the officers of the two powers in America had already taken place. Neither government was scrupulous in abstaining from the use of force while peace was still nominally unbroken. Hawke was sent to sea to intercept a French squadron which had been cruising near Gibraltar, but a restriction was put on the limits within which he might cruise, and he failed to meet the French. The fleet was much weakened by ill-health. In June 1756 the news of John Byng's retreat from Minorca reached England and aroused the utmost indignation. Hawke was at once sent out to relieve him in the Mediterranean command, and to send him home for trial. He sailed in the "Antelope," carrying, as the wits of the day put it, "a cargo of courage" to supply deficiencies in that respect among the officers then in the Mediterranean. Minorca had fallen, from want of resources rather than the attacks of the French, before he could do anything for the assistance of the garrison of Fort St Philip. In winter he was recalled to England, and he reached home on the 14th of January 1757. On the 24th of February following he was promoted full admiral.

It is said, but on no very good authority, that he was not on good terms with Pitt (afterwards earl of Chatham), and it is certain that when Pitt's great ministry was formed in June 1757, he was not included in the Board of Admiralty. Yet as he was continued in command of important forces in the Channel, it is obvious that his great capacity was fully recognized. In the late summer of 1757 he was entrusted with the naval side of an expedition to the coast of France. These operations, which were scoffingly described at the time as breaking windows with guineas, were a favourite device of Pitt's for weakening the French and raising the confidence of the country. The expedition of 1757 was directed against Rochefort, and it effected nothing. Hawke, who probably expected very little good from it, did his own work as admiral punctually, but he cannot be said to have shown zeal, or any wish to inspirit the military officers into making greater efforts than they were disposed naturally to make. The expedition returned to Spithead by the 6th of October. No part of the disappointment of the public, which was acute, was visited on Hawke. During the end of 1757 and the beginning of 1758 be continued cruising in the Channel in search of the French naval forces, without any striking success. In May of that year he was ordered to detach a squadron under the command of Howe to carry out further combined operations. Hawke considered himself as treated with a want of due respect, and was at the time in bad humour with the Admiralty. He somewhat pettishly threw up his command, but was induced to resume it by the board, which knew his value, and was not wanting in flattery. He retired in June for a time on the ground of health, but happily for his own glory and the service of the country he was able to hoist his flag in May 1759, the "wonderful year" of Garrick's song.

France was then elaborating a scheme of invasion which bears much resemblance to the plan afterwards formed by Napoleon. An army of invasion was collected at the Morbihan in Brittany, and the intention was to transport it under the protection of a powerful fleet which was to be made up by uniting the squadron at Brest with the ships at Toulon. The plan, like Napoleon's, had slight chance of success, since the naval part of the invading force must necessarily be brought together from distant points at the risk of interruption by the British squadrons. The naval forces of England were amply sufficient to provide whatever was needed to upset the plans of the French government. But the country was not so confident in the capacity of the navy to serve as a defence as it was taught to be in later generations. It had been seized by a most shameful panic at the beginning of the war in face of a mere threat of invasion. Therefore the anxiety of Pitt to baffle the schemes of the French decisively was great, and the country looked on at the development of the naval campaign with nervous attention. The proposed combination of the French fleet was defeated by the annihilation of the Toulon squadron on the coast of Portugal by Boscawen in May, but the Brest fleet was still untouched and the troops were still at

Morbihan. It was the duty of Hawke to prevent attack from this quarter. The manner in which he discharged his task marks an epoch in the history of the navy. Until his time, or very nearly so, it was still believed that there was rashness in keeping the great ships out after September. Hawke maintained his blockade of Brest till far into November. Long cruises had always entailed much bad health on the crews, but by the care he took to obtain fresh food, and the energy he showed in pressing the Admiralty for stores, he was able to keep his men healthy. Early in November a series of severe gales forced him off the French coast, and he was compelled to anchor in Torbay. His absence was brief, but it allowed the French admiral, M. de Conflans (1690?-1777), time to put to sea, and to steer for the Morbihan. Hawke, who had left Torbay on the 13th of November, learnt of the departure of the French at sea on the 17th from a look-out ship, and as the French admiral could have done nothing but steer for the Morbihan, he followed him thither. The news that M. de Conflans had got to sea spread a panic through the country, and for some days Hawke was the object of abuse of the most irrational kind. There was in fact no danger, for behind Hawke's fleet there were ample reserves in the straits of Dover, and in the North Sea. Following his enemy as fast as the bad weather, a mixture of calms and head winds would allow, the admiral sighted the French about 40 m. to the west of Belleisle on the morning of the 20th of November. The British fleet was of twenty-one sail, the French of twenty. There was also a small squadron of British ships engaged in watching the Morbihan as an inshore squadron, which was in danger of being cut off. M. de Conflans had a sufficient force to fight in the open sea without rashness, but after making a motion to give battle, he changed his mind and gave the signal to his fleet to steer for the anchorage at Quiberon. He did not believe that the British admiral would dare to follow him, for the coast is one of the most dangerous in the world, and the wind was blowing hard from the west and rising to a storm. Hawke, however, pursued without hesitation, though it was well on in the afternoon before he caught up the rear of the French fleet, and dark by the time the two fleets were in the bay. The action, which was more a test of seamanship than of gunnery, or capacity to manœuvre in order, ended in the destruction of the French. Five ships only were taken or destroyed, but others ran ashore, and the French navy as a whole lost all confidence. Two British vessels were lost, but the price was little to pay for such a victory. No more fighting remained to be done. The fleet in Quiberon Bay suffered from want of food, and its distress is recorded in the lines:—

"Ere Hawke did bang
Mounseer Conflang
You sent us beef and beer;
Now Mounseer's beat
We've nought to eat,
Since you have nought to fear."

Hawke returned to England in January 1760 and had no further service at sea. He was not made a peer till the 20th of May 1776, and then only as Baron Hawke of Towton. From 1776 to 1771 he was first lord of the Admiralty. His administration was much criticized, perhaps more from party spirit than because of its real defects. Whatever his relations with Lord Chatham may have been he was no favourite with Chatham's partizans. It is very credible that, having spent all his life at sea, his faculty did not show in the uncongenial life of the shore. As an admiral at sea and on his own element Hawke has had no superior. It is true that he was not put to the test of having to meet opponents of equal strength and efficiency, but then neither has any other British admiral since the Dutch wars of the 17th century. On his death on the 17th of October 1781 his title passed to his son, Martin Bladen (1744-1805), and it is still held by his descendants, the 7th Baron (b. 1860) being best known as a great Yorkshire cricketer.

There is a portrait of Hawke in the Painted Hall at Greenwich. His *Life* by Montagu Burrows (1883) has superseded all other authorities; it is supplemented in a few early particulars by Sir J. K. Laughton's article in the *Dict. Nat. Biog.* (1891).

HAWKER, ROBERT STEPHEN (1803-1874), English antiquary and poet, was born at Stoke Damerel, Devonshire, on the 3rd of December 1803. His father, Jacob Stephen Hawker, was at that time a doctor, but afterwards curate and vicar of Stratton, Cornwall. Robert was sent to Liskeard grammar school, and when he was about sixteen was apprenticed to a solicitor. He was soon removed to Cheltenham grammar school, and in April 1823 matriculated at Pembroke College, Oxford. In the same year he married Charlotte I'Ans, a lady much older than himself. On returning to Oxford he migrated to Magdalen Hall, where he graduated in 1828, having already won the Newdigate prize for poetry in 1827. He became vicar of Morwenstow, a village on the north Cornish coast, in 1834. Hawker described the bulk of his parishioners as a "mixed multitude of smugglers, wreckers and dissenters of various hues." He was himself a high churchman, and carried things with a high hand in his parish, but was much beloved by his people. He was a man of great originality, and numerous stories were told of his striking sayings and eccentric conduct. He was the original of Mortimer Collins's Canon Tremaine in *Sweet and Twenty*. His first wife died in 1863, and in 1864 he married Pauline Kuczynski, daughter of a Polish exile. He died in Plymouth on the 15th of August 1875. Before his death he was formally received into the Roman Catholic Church, a proceeding which aroused a bitter newspaper controversy. The best of his poems is *The Quest of the Sangraal: Chant the First* (Exeter, 1864). Among his *Cornish Ballads* (1869) the most famous is on "Trelawny," the refrain of which, "And shall Trelawny die," &c., he declared to be an old Cornish saying.

See *The Vicar of Morwenstow* (1875; later and corrected editions, 1876 and 1886), by the Rev. S. Baring-Gould, which was severely criticized by Hawker's friend, W. Maskell, in the *Athenaeum* (March 26, 1876); *Memorials of the late Robert Stephen Hawker* (1876), by the late Dr F. G. Lee. These were superseded in 1905 by *The Life and Letters of R. S. Hawker*, by his son-in-law, C. E. Byles, which contains a bibliography of his works, now very valuable to collectors. See also Boase and Courtney, *Bibliotheca Cornubiensis*. His *Poetical Works* (1879) and his *Prose Works* (1893) were edited by J. G. Godwin. Another edition of his *Poetical Works* (1899) has a preface and bibliography by Alfred Wallis, and a complete edition of his poems by C. E. Byles, with the title *Cornish Ballads and other Poems*, appeared in 1904.

HAWKERS and **PEDLARS**, the designation of itinerant dealers who convey their goods from place to place to sell. The word “hawker” seems to have come into English from the Ger. *Höker* or Dutch *heuker* in the early 16th century. In an act of 1533 (25 Henry VIII. c. 9, § 6) we find “Sundry evill disposed persons which commonly beane called haukers ... buying and selling of Brasse and Pewter.” The earlier word for such an itinerant dealer is “huckster,” which is found in 1200. “For that they have turned God’s house intill hucksteress bothe” (*Ormulum*, 15,817). The base of the two words is the same, and is probably to be referred to German *hocken*, to squat, crouch; cf. “hucklebone,” the hip-bone; and the hawkers or hucksters were so called either because they stooped under their packs, or squatted at booths in markets, &c. Another derivation finds the origin in the Dutch *hock*, a hole, corner. It may be noticed that the termination of “huckster” is feminine; though there are examples of its application to women it was always applied indiscriminately to either sex.

“Pedlar” occurs much earlier than the verbal form “to peddle,” which is therefore a derivative from the substantive. The origin is to be found in the still older word “pedder,” one who carries about goods for sale in a “ped,” a basket or hamper. This is now only used dialectically and in Scotland. In the *Ancren Riwle* (*c.* 1225), *peoddare* is found with the meaning of “pedlar,” though the *Promptorium parvulorum* (*c.* 1440) defines it as *calathasius*, *i.e.* a maker of panniers or baskets.

The French term for a hawker or pedlar of books, *colporteur* (*col*, neck, *porter*, to carry), has been adopted by the Bible Society and other English religious bodies as a name for itinerant vendors and distributors of Bibles and other religious literature.

The occupation of hawkers and pedlars has been regulated in the United Kingdom, and the two classes have also been technically distinguished. The Pedlars Act 1871 defines a pedlar as “any hawker, pedlar, petty chapman, tinker, caster of metals, mender of chairs, or other person who, *without* any horse or other beast bearing or drawing burden, travels and trades on foot and goes from town to town or to other men’s houses, carrying to sell or exposing for sale any goods, wares or merchandise ... or selling or offering for sale his skill in handicraft.” Any person who acts as a pedlar must have a certificate, which is to be obtained from the chief officer of police of the police district in which the person applying for the certificate has resided during one month previous to his application. He must satisfy the officer that he is above seventeen years of age, is of good character, and in good faith intends to carry on the trade of a pedlar. The fee for a pedlar’s certificate is five shillings, and the certificate remains in force for a year from the date of issue. The act requires a register of certificates to be kept in each district, and imposes a penalty for the assigning, borrowing or forging of any certificate. It does not exempt any one from vagrant law, and requires the pedlar to show his certificate on demand to certain persons. It empowers the police to inspect a pedlar’s pack, and provides for the arrest of an uncertificated pedlar or one refusing to show his certificate. A pedlar’s certificate is not required by commercial travellers, sellers of vegetables, fish, fruit or victuals, or sellers in fairs. The Hawkers Act 1888 defines a hawker as “any one who travels *with* a horse or other beast of burden, selling goods,” &c. An excise licence (expiring on the 31st of March in each year) must be taken out by every hawker in the United Kingdom. The duty imposed upon such licence is £2. A hawker’s licence is not granted, otherwise than by way of licence, except on production of a certificate signed by a clergyman and two householders of the parish or place wherein the applicant resides, or by a justice of the county or place, or a superintendent or inspector of police for the district, attesting that the person is of good character and a proper person to be licenced as a hawker. There are certain exemptions from taking out a licence—commercial travellers, sellers of fish, coal, &c., sellers in fairs, and the real worker or maker of any goods. The act also lays down certain provisions to be observed by hawkers and others, and imposes penalties for infringements. In the United States hawkers and pedlars must take out licences under State laws and Federal laws.

HAWKESWORTH, JOHN (*c.* 1715-1773), English miscellaneous writer, was born in London about 1715. He is said to have been clerk to an attorney, and was certainly self-educated. In 1744 he succeeded Samuel Johnson as compiler of the parliamentary debates for the *Gentleman’s Magazine*, and from 1746 to 1749 he contributed poems signed Greville, or H. Greville, to that journal. In company with Johnson and others he started a periodical called *The Adventurer*, which ran to 140 numbers, of which 70 were from the pen of Hawkesworth himself. On account of what was regarded as its powerful defence of morality and religion, Hawkesworth was rewarded by the archbishop of Canterbury with the degree of LL.D. In 1754-1755 he published an edition (12 vols.) of Swift’s works, with a life prefixed which Johnson praised in his *Lives of the Poets*. A larger edition (27 vols.) appeared in 1766-1779. He adapted Dryden’s *Amphitryon* for the Drury Lane stage in 1756, and Southerne’s *Oronooko* in 1759. He wrote the libretto of an oratorio *Zimri* in 1760, and the next year *Edgar and Emmeline: a Fairy Tale*, was produced at Drury Lane. His *Almoran and Hamet* (2 vols., 1761) was first of all drafted as a play, and a tragedy founded on it by S. J. Pratt, *The Fair Circassian* (1781), met with some success. He was commissioned by the admiralty to edit Captain Cook’s papers relative to his first voyage. For this work, *An Account of the Voyages undertaken ... for making discoveries in the Southern Hemisphere and performed by Commodore Byrone, Captain Wallis, Captain Carteret and Captain Cook* (*from 1764 to 1771*) *drawn up from the Journals ...* (3 vols., 1773), Hawkesworth is said to have received from the publishers the sum of £6000. His descriptions of the manners and customs of the South Seas were, however, regarded by many critics as inexact and hurtful to the interests of morality, and the severity of their strictures is said to have hastened his death, which took place on the 16th of November 1773. He was buried at Bromley, Kent, where he and his wife had kept a school. Hawkesworth was a close imitator of Johnson both in style and thought, and was at one time on very friendly terms with him. It is said that he presumed on his success, and lost Johnson’s friendship as early as 1756.

HAWKHURST, a town in the southern parliamentary division of Kent, England, 47 m. S.E. of London, on a branch of the South-Eastern & Chatham railway. Pop. (1901), 3136. It lies mainly on a ridge above the valley of the Kent Ditch, a tributary of the Rother. The neighbouring country is hilly, rich and well wooded, and the pleasant and healthy situation has led to the considerable extension of the old village as a residential locality. The Kent Sanatorium and one of the Barnardo homes are established here. The church of St Lawrence, founded from Battle Abbey in Sussex, is Decorated and Perpendicular and its east window, of the earlier period, is specially beautiful.

HAWKINS, CAESAR HENRY (1798-1884), British surgeon, son of the Rev. E. Hawkins and grandson of the Sir Caesar Hawkins (1711-1786), who was serjeant-surgeon to Kings George II. and George III., was born at Bisley, Gloucestershire, on the 19th of September 1798, was educated at Christ's Hospital, and entered St George's Hospital, London, in 1818. He was surgeon to the hospital from 1829 to 1861, and in 1862 was made serjeant-surgeon to Queen Victoria. He was president of the College of Surgeons in 1852, and again in 1861; and he delivered the Hunterian oration in 1849. His success in complex surgical cases gave him a great reputation. For long he was noted as the only surgeon who had succeeded in the operation of ovariotomy in a London hospital. This occurred in 1846, when anaesthetics were unknown. He did much to popularize colotomy. A successful operator, he nevertheless was attached to conservative surgery, and was always more anxious to teach his pupils how to save a limb than how to remove it. He reprinted his contributions to the medical journals in two volumes, 1874, the more valuable papers being on *Tumours*, *Excision of the Ovarium*, *Hydrophobia and Snake-bites*, *Stricture of the Colon*, and *The Relative Claims of Sir Charles Bell and Magendie to the Discovery of the Functions of the Spinal Nerves*. He died on the 20th of July 1884. His brother, Edward Hawkins (1789-1882), was the well-known provost of Oriel, Oxford, who played so great a part in the Tractarian movement.

HAWKINS, or HAWKYNS, **SIR JOHN** (1532-1595), British admiral, was born at Plymouth in 1532, and belonged to a family of Devonshire shipowners and skippers—occupations then more closely connected than is now usual. His father, William Hawkins (d. 1553), was a prosperous freeman of Plymouth, who thrice represented that town in parliament, and is described by Hakluyt as one of the principal sea-captains in the west parts of England; his elder brother, also called William (d. 1589), was closely associated with him in his Spanish expeditions, and took an active part in fitting out ships to meet the Armada; and his nephew, the eldest son of the last named and of the same name, sailed with Sir Francis Drake to the South Sea in 1577, and served as lieutenant under Edward Fenton (*q.v.*) in the expedition which started for the East Indies and China in 1582. His son, Sir Richard Hawkins, is separately noticed.

Sir John Hawkins was bred to the sea in the ships of his family. When the great epoch of Elizabethan maritime adventure began, he took an active part by sailing to the Guinea coast, where he robbed the Portuguese slavers, and then smuggled the negroes he had captured into the Spanish possessions in the New World. After a first successful voyage in 1562-1563, two vessels which he had rashly sent to Seville were confiscated by the Spanish government. With the help of friends, and the open approval of the queen, who hired one of her vessels to him, he sailed again in 1564, and repeated his voyage with success, trading with the Creoles by force when the officials of the king endeavoured to prevent him. These two voyages brought him reputation, and he was granted a coat of arms with a demi-Moor, or negro, chained, as his crest. The rivalry with Spain was now becoming very acute, and when Hawkins sailed for the third time in 1567, he went in fact, though not technically, on a national venture. Again he kidnapped negroes, and forced his goods on the Spanish colonies. Encouraged by his discovery that these settlements were small and unfortified, he on this occasion ventured to enter Vera Cruz, the port of Mexico, after capturing some Spaniards at sea to be held as hostages. He alleged that he had been driven in by bad weather. The falsity of the story was glaring, but the Spanish officers on the spot were too weak to offer resistance. Hawkins was allowed to enter the harbour, and to refit at the small rocky island of San Juan de Ulloa by which it is formed. Unfortunately for him, and for a French corsair whom he had in his company, a strong Spanish force arrived, bringing the new viceroy. The Spaniards, who were no more scrupulous of the truth than himself, pretended to accept the arrangement made before their arrival, and then when they thought he was off his guard attacked him on the 24th of September. Only two vessels escaped, his own, the "Minion," and the "Judith," a small vessel belonging to his cousin Francis Drake. The voyage home was miserable, and the sufferings of all were great.

For some years Hawkins did not return to the sea, though he continued to be interested in privateering voyages as a capitalist. In the course of 1572 he recovered part of his loss by pretending to betray the queen for a bribe to Spain. He acted with the knowledge of Lord Burleigh. In 1573 he became treasurer of the navy in succession to his father-in-law Benjamin Gonson. The office of comptroller was conferred on him soon after, and for the rest of his life he remained the principal administrative officer of the navy. Burleigh noted that he was suspected of fraud in his office, but the queen's ships were kept by him in good condition. In 1588 he served as rear-admiral against the Spanish Armada and was knighted. In 1590 he was sent to the coast of Portugal to intercept the Spanish treasure fleet, but did not meet it. In giving an account of his failure to the queen he quoted the text "Paul doth plant, Apollo doth water, but God giveth the increase," which exhibition of piety is said to have provoked the queen into exclaiming, "God's death! This fool went out a soldier, and has come home a divine." In 1595 he accompanied Drake on another treasure-hunting voyage to the West Indies, which was even less successful, and he died at sea off Porto Rico on the 12th of November 1595.

Hawkins was twice married, first to Katharine Gonson and then to Margaret Vaughan. He was counted a puritan when puritanism meant little beyond hatred of Spain and popery, and when these principles were an ever-ready excuse for voyages in search of slaves and plunder. In the course of one of his voyages, when he was

becalmed and his negroes were dying, he consoled himself by the reflection that God would not suffer His elect to perish. Contemporary evidence can be produced to show that he was greedy, unscrupulous and rude. But if he had been a more delicate man he would not have risked the gallows by making piratical attacks on the Portuguese and by appearing in the West Indies as an armed smuggler; and in that case he would not have played an important part in history by setting the example of breaking down the pretension of the Spaniards to exclude all comers from the New World. His morality was that of the average stirring man of his time, whether in England or elsewhere.

See R. A. J. Walling, *A Sea-dog of Devon* (1907); and Southey in his *British Admirals*, vol. iii. The original accounts of his voyages compiled by Hakluyt have been reprinted by the Hakluyt Society, with a preface by Sir C. R. Markham.

HAWKINS, SIR JOHN (1719-1789), English writer on music, was born on the 30th of March 1719, in London, the son of an architect who destined him for his own profession. Ultimately, however, Hawkins took to the law, devoting his leisure hours to his favourite study of music. A wealthy marriage in 1753 enabled him to indulge his passion for acquiring rare works of music, and he bought, for example, the collection formed by Dr Pepusch, and subsequently presented by Hawkins to the British Museum. It was on such materials that Hawkins founded his celebrated work on the *General History of the Science and Practice of Music*, in 5 vols. (republished in 2 vols., 1876). It was brought out in 1776, the same year which witnessed the appearance of the first volume of Burney's work on the same subject. The relative merits of the two works were eagerly discussed by contemporary critics. Burney no doubt is infinitely superior as a literary man, and his work accordingly comes much nearer the idea of a systematic treatise on the subject than Hawkins's, which is essentially a collection of rare and valuable pieces of music with a more or less continuous commentary. But by rescuing these from oblivion Hawkins has given a permanent value to his work. Of Hawkins's literary efforts apart from music it will be sufficient to mention his occasional contributions to the *Gentleman's Magazine*, his edition (1760) of the *Complete Angler* (1787) and his biography of Dr Johnson, with whom he was intimately acquainted. He was one of the original members of the Ivy Lane Club, and ultimately became one of Dr Johnson's executors. If there were any doubt as to his intimacy with Johnson, it would be settled by the slighting way in which Boswell refers to him. Speaking of the Ivy Lane Club, he mentions amongst the members "Mr John Hawkins, an attorney," and adds the following footnote, which at the same time may serve as a summary of the remaining facts of Hawkins's life: "He was for several years chairman of the Middlesex justices, and upon presenting an address to the king accepted the usual offer of knighthood (1772). He is the author of a *History of Music* in five volumes in quarto. By assiduous attendance upon Johnson in his last illness he obtained the office of one of his executors—in consequence of which the booksellers of London employed him to publish an edition of Dr Johnson's works and to write his life." Sir John Hawkins died on the 21st of May 1789, and was buried in the cloisters of Westminster Abbey.

HAWKINS, or Hawkyns, **SIR RICHARD** (*c.* 1562-1622), British seaman, was the only son of Admiral Sir John Hawkins (*q.v.*) by his first marriage. He was from his earliest days familiar with ships and the sea, and in 1582 he accompanied his uncle, William Hawkins, to the West Indies. In 1585 he was captain of a galliot in Drake's expedition to the Spanish main, in 1588 he commanded a queen's ship against the Armada, and in 1590 served with his father's expedition to the coast of Portugal. In 1593 he purchased the "Dainty," a ship originally built for his father and used by him in his expeditions, and sailed for the West Indies, the Spanish main and the South Seas. It seems clear that his project was to prey on the oversea possessions of the king of Spain. Hawkins, however, in an account of the voyage written thirty years afterwards, maintained, and by that time perhaps had really persuaded himself, that his expedition was undertaken purely for the purpose of geographical discovery. After visiting the coast of Brazil, the "Dainty" passed through the Straits of Magellan, and in due course reached Valparaiso. Having plundered the town, Hawkins pushed north, and in June 1594, a year after leaving Plymouth, arrived in the bay of San Mateo. Here the "Dainty" was attacked by two Spanish ships. Hawkins was hopelessly outmatched, but defended himself with great courage. At last, when he himself had been severely wounded, many of his men killed, and the "Dainty" was nearly sinking, he surrendered on the promise of a safe-conduct out of the country for himself and his crew. Through no fault of the Spanish commander this promise was not kept. In 1597 Hawkins was sent to Spain, and imprisoned first at Seville and subsequently at Madrid. He was released in 1602, and, returning to England, was knighted in 1603. In 1604 he became member of parliament for Plymouth and vice-admiral of Devon, a post which, as the coast was swarming with pirates, was no sinecure. In 1620-1621 he was vice-admiral, under Sir Robert Mansell, of the fleet sent into the Mediterranean to reduce the Algerian corsairs. He died in London on the 17th of April 1622.

See his *Observations in his Voiage into the South Sea* (1622), republished by the Hakluyt Society.

HAWKS, FRANCIS LISTER (1798-1866), American clergyman, was born at Newbern, North Carolina, on the 10th of June 1798, and graduated at the university of his native state in 1815. After practising law with some distinction he entered the Episcopalian ministry in 1827 and proved a brilliant and impressive preacher, holding livings in New Haven, Philadelphia, New York and New Orleans, and declining several bishoprics. On his appointment as historiographer of his church in 1835, he went to England, and collected the abundant materials afterwards utilized in his *Contributions to the Ecclesiastical History of U.S.A.* (New York, 1836-1839). These two

volumes dealt with Maryland and Virginia, while two later ones (1863-1864) were devoted to Connecticut. He was the first president of the university of Louisiana (now merged in Tulane). He died in New York on the 26th of September 1866.

HAWKSHAW, SIR JOHN (1811-1891), English engineer, was born in Yorkshire in 1811, and was educated at Leeds grammar school. Before he was twenty-one he had been engaged for six or seven years in railway engineering and the construction of roads in his native county, and in the year of his majority he obtained an appointment as engineer to the Bolivar Mining Association in Venezuela. But the climate there was more than his health could stand, and in 1834 he was obliged to return to England. He soon obtained employment under Jesse Hartley at the Liverpool docks, and subsequently was made engineer in charge of the railway and navigation works of the Manchester, Bury and Bolton Canal Company. In 1845 he became chief engineer to the Manchester & Leeds railway, and in 1847 to its successor, the Lancashire & Yorkshire railway, for which he constructed a large number of branch lines. In 1850 he removed to London and began to practise as a consulting engineer, at first alone, but subsequently in partnership with Harrison Hayter. In that capacity his work was of an extremely varied nature, embracing almost every branch of engineering. He retained his connexion with the Lancashire & Yorkshire Company until his retirement from professional work in 1888, and was consulted on all the important engineering points that affected it in that long period. In London he was responsible for the Charing Cross and Cannon Street railways, together with the two bridges which carried them over the Thames; he was engineer of the East London railway, which passes under the Thames through Sir M. I. Brunel's well-known tunnel; and jointly with Sir J. Wolfe Barry he constructed the section of the Underground railway which completed the "inner circle" between the Aldgate and Mansion House stations. In addition, many railway works claimed his attention in all parts of the world—Germany, Russia, India, Mauritius, &c. One noteworthy point in his railway practice was his advocacy, in opposition to Robert Stephenson, of steeper gradients than had previously been thought desirable or possible, and so far back as 1838 he expressed decided disapproval of the maintenance of the broad gauge on the Great Western, because of the troubles he foresaw it would lead to in connexion with future railway extension, and because he objected in general to breaks of gauge in the lines of a country. The construction of canals was another branch of engineering in which he was actively engaged. In 1862 he became engineer of the Amsterdam ship-canal, and in the succeeding year he may fairly be said to have been the saviour of the Suez Canal. About that time the scheme was in very bad odour, and the khedive determined to get the opinion of an English engineer as to its practicability, having made up his mind to stop the works if that opinion was unfavourable. Hawkshaw was chosen to make the inquiry, and it was because his report was entirely favourable that M. de Lesseps was able to say at the opening ceremony that to him he owed the canal. As a member of the International Congress which considered the construction of an interoceanic canal across central America, he thought best of the Nicaraguan route, and privately he regarded the Panama scheme as impracticable at a reasonable cost, although publicly he expressed no opinion on the matter and left the Congress without voting. Sir John Hawkshaw also had a wide experience in constructing harbours (*e.g.* Holyhead) and docks (*e.g.* Penarth, the Albert Dock at Hull, and the south dock of the East and West India Docks in London), in river-engineering, in drainage and sewerage, in water-supply, &c. He was engineer, with Sir James Brunlees, of the original Channel Tunnel Company from 1872, but many years previously he had investigated for himself the question of a tunnel under the Strait of Dover from an engineering point of view, and had come to a belief in its feasibility, so far as that could be determined from borings and surveys. Subsequently, however, he became convinced that the tunnel would not be to the advantage of Great Britain, and thereafter would have nothing to do with the project. He was also engineer of the Severn Tunnel, which, from its magnitude and the difficulties encountered in its construction, must rank as one of the most notable engineering undertakings of the 19th century. He died in London on the 2nd of June 1891.

HAWKSLEY, THOMAS (1807-1893), English engineer, was born on the 12th of July 1807, at Arnold, near Nottingham. He was at Nottingham grammar school till the age of fifteen, but was indebted to his private studies for his knowledge of mathematics, chemistry and geology. In 1822 he was articled to an architect in Nottingham, subsequently becoming a partner in the firm, which also undertook engineering work; and in 1852 he removed to London, where he continued in active practice till he was well past eighty. His work was chiefly concerned with water and gas supply and with main-drainage. Of waterworks he used to say that he had constructed 150, and a long list might be drawn up of important towns that owe their water to his skill, including Liverpool, Sheffield, Leicester, Leeds, Derby, Darlington, Oxford, Cambridge and Northampton in England, and Stockholm, Altona and Bridgetown (Barbados) in other countries. To his native town of Nottingham he was water engineer for fifty years, and the system he designed for it was noteworthy from the fact that the principle of constant supply was adopted for the first time. The gas-works at Nottingham, and at many other towns for which he provided water supplies were also constructed by him. He designed main-drainage systems for Birmingham, Worcester and Windsor among other places, and in 1857 he was called in, together with G. P. Bidder and Sir J. Bazalgette, to report on the best solution of the vexed question of a main-drainage scheme for London. In 1872 he was president of the Institution of Civil Engineers—an office in which his son Charles followed him in 1901. He died in London on the 23rd of September 1893.

HAWKSMOOR, NICHOLAS (1661-1736), English architect, of Nottinghamshire birth, became a pupil of Sir

Christopher Wren at the age of eighteen, and his name is intimately associated with those of Wren and Sir J. Vanbrugh in the English architecture of his time. Through Wren's influence he obtained various official posts, as deputy-surveyor at Chelsea hospital, clerk of the works and deputy-surveyor at Greenwich hospital, clerk of the works at Whitehall, St James's and Westminster, and he succeeded Wren as surveyor-general of Westminster Abbey. He took part in much of the work done by Wren and Vanbrugh, and it is difficult often to assign among them the credit for the designs of various features. Hawksmoor appears, however, to have been responsible for the early Gothic designs of the two towers of All Souls' (Oxford) north quadrangle, and the library and other features at Queen's College (Oxford). At the close of Queen Anne's reign he had a principal part in the scheme for building fifty new churches in London, and himself designed five or six of them, including St Mary Woolnoth (1716-1719) and St George's, Bloomsbury (1720-1730). A number of his drawings have been preserved. He died in London on the 25th of March 1736.

HAWKWOOD, SIR JOHN (d. 1394), an English adventurer who attained great wealth and renown as a condottiere in the Italian wars of the 14th century. His name is variously spelt as Haccoude, Aucud, Aguto, &c., by contemporaries. It is said that he was the son of a tanner of Hedingham Sibil in Essex, and was apprenticed in London, whence he went, in the English army, to France under Edward III. and the Black Prince. It is said also that he obtained the favour of the Black Prince, and received knighthood from King Edward III., but though it is certain that he was of knightly rank, there is no evidence as to the time or place at which he won it. On the peace of Bretigny in 1360, he collected a band of men-at-arms, and moved southward to Italy, where we find the White Company, as his men were called, assisting the marquis of Monferrato against Milan in 1362-63, and the Pisans against Florence in 1364. After several campaigns in various parts of central Italy, Hawkwood in 1368 entered the service of Bernabò Visconti. In 1369 he fought for Perugia against the pope, and in 1370 for the Visconti against Pisa, Florence and other enemies. In 1372 he defeated the marquis of Monferrato, but soon afterwards, resenting the interference of a council of war with his plans, Hawkwood resigned his command, and the White Company passed into the papal service, in which he fought against the Visconti in 1373-1375. In 1375 the Florentines entered into an agreement with him, by which they were to pay him and his companion 130,000 gold florins in three months on condition that he undertook no engagement against them; and in the same year the priors of the arts and the gonfalonier decided to give him a pension of 1200 florins per annum for as long as he should remain in Italy. In 1377, under the orders of the cardinal Robert of Geneva, legate of Bologna, he massacred the inhabitants of Cesena, but in May of the same year, disliking the executioner's work put upon him by the legate, he joined the anti-papal league, and married, at Milan, Donnina, an illegitimate daughter of Bernabò Visconti. In 1378 and 1379 Hawkwood was constantly in the field; he quarrelled with Bernabò in 1378, and entered the service of Florence, receiving, as in 1375, 130,000 gold florins. He rendered good service to the republic up to 1382, when for a time he was one of the English ambassadors at the papal court. He engaged in a brief campaign in Naples in 1383, fought for the marquis of Padua against Verona in 1386, and in 1388 made an unsuccessful effort against Gian Galeazzo Visconti, who had murdered Bernabò. In 1390 the Florentines took up the war against Gian Galeazzo in earnest, and appointed Hawkwood commander-in-chief. His campaign against the Milanese army in the Veronese and the Bergamask was reckoned a triumph of generalship, and in 1392 Florence exacted a satisfactory peace from Gian Galeazzo. His latter years were spent in a villa in the neighbourhood of Florence. On his death in 1394 the republic gave him a public funeral of great magnificence, and decreed the erection of a marble monument in the cathedral. This, however, was never executed; but Paolo Uccelli painted his portrait in terre-verte on the inner façade of the building, where it still remains, though damaged by removal from the plaster to canvas. Richard II. of England, probably at the instigation of Hawkwood's sons, who returned to their native country, requested the Florentines to let him remove the good knight's bones, and the Florentine government signified its consent.

Of his children by Donnina Visconti, who appears to have been his second wife, the eldest daughter married Count Brezaglia of Porciglia, podestá of Ferrara, who succeeded him as Florentine commander-in-chief, and another a German condottiere named Conrad Prospergh. His son, John, returned to England and settled at Hedingham Sibil, where, it is supposed, Sir John Hawkwood was buried. The children of the first marriage were two sons and three daughters, and of the latter the youngest married John Shelley, an ancestor of the poet.

AUTHORITIES.—Muratori, *Rerum Italicarum scriptores*, and supplement by Tartinius and Manni; *Archivio storico italiano*; Temple-Leader and Marcotti, *Giovanni Acuto* (Florence, 1889; Eng. transl., Leader Scott, London, 1889); Nichol, *Bibliotheca topographica Britannica*, vol. vi.; J. G. Alger in *Register and Magazine of Biography*, v. 1.; and article in *Dict. Nat. Biog.*

HAWLEY, HENRY (*c.* 1679-1759), British lieut.-general, entered the army, it is said, in 1694. He saw service in the War of Spanish Succession as a captain of Erle's (the 19th) foot. After Almanza he returned to England, and a few years later had become lieut.-colonel of the 19th. With this regiment he served at Sheriffmuir in 1715, where he was wounded. After this for some years he served in the United Kingdom, obtaining promotion in the usual course, and in 1739 he arrived at the grade of major general. Four years later he accompanied George II. and Stair to Germany, and, as a general officer of cavalry under Sir John Cope, was present at Dettingen. Becoming lieut.-general somewhat later, he was second-in-command of the cavalry at Fontenoy, and on the 20th of December 1745 became commander-in-chief in Scotland. Less than a month later Hawley suffered a severe defeat at Falkirk at the hands of the Highland insurgents. This, however, did not cost him his command, for the duke of Cumberland, who was soon afterwards sent north, was captain-general. Under Cumberland's orders Hawley led the cavalry in the campaign of Culloden, and at that battle his dragoons distinguished themselves by their ruthless butchery of the fugitive rebels. After the end of the "Forty-Five" he accompanied Cumberland to the Low Countries and led the allied cavalry at Lauffeld (Val). He ended his career as governor of Portsmouth and died at

that place in 1759. James Wolfe, his brigade-major, wrote of General Hawley in no flattering terms. “The troops dread his severity, hate the man and hold his military knowledge in contempt,” he wrote. But, whether it be true or false that he was the natural son of George II., Hawley was always treated with the greatest favour by that king and by his son the duke of Cumberland.

HAWLEY, JOSEPH ROSWELL (1826-1905), American political leader, was born on the 31st of October at Stewartsville, Richmond county, North Carolina, where his father, a native of Connecticut, was pastor of a Baptist church. The father returned to Connecticut in 1837 and the son graduated at Hamilton College (Clinton, N.Y.) in 1847. He was admitted to the bar in 1850, and practised at Hartford, Conn., for six years. An ardent opponent of slavery, he became a Free Soiler, was a delegate to the National Convention which nominated John P. Hale for the presidency in 1852, and subsequently served as chairman of the State Committee, having at the same time editorial control of the *Charter Oak*, the party organ. In 1856 he took a leading part in organizing the Republican party in Connecticut, and in 1857 became editor of the Hartford *Evening Press*, a newly established Republican newspaper. He served in the Federal army throughout the Civil War, rising from the rank of captain (April 22, 1861) to that of brigadier-general of volunteers (Sept. 1864); took part in the Port Royal Expedition, in the capture of Fort Pulaski (April 1862), in the siege of Charleston and the capture of Fort Wagner (Sept. 1863), in the battle of Olustee (Feb. 20, 1864), in the siege operations about Petersburg, and in General W. T. Sherman’s campaign in the Carolinas; and in September 1865 received the brevet of major-general of volunteers. From April 1866 to April 1867 he was governor of Connecticut, and in 1867 he bought the Hartford *Courant*, with which he combined the *Press*, and which became under his editorship the most influential newspaper in Connecticut and one of the leading Republican papers in the country. He was the permanent chairman of the Republican National Convention in 1868, was a delegate to the conventions of 1872, 1876 and 1880, was a member of Congress from December 1872 until March 1875 and again in 1879-1881, and was a United States senator from 1881 until the 3rd of March 1905, being one of the Republican leaders both in the House and the Senate. From 1873 to 1876 he was president of the United States Centennial Commission, the great success of the Centennial Exhibition being largely due to him. He died at Washington, D.C., on the 17th of March 1905.

HAWORTH, an urban district in the Keighley parliamentary division of the West Riding of Yorkshire, England, 10 m. N.W. of Bradford, on a branch of the Midland railway. Pop. (1901), 7492. It is picturesquely situated on a steep slope, lying high, and surrounded by moorland. The Rev. Patrick Brontë (d. 1861) was incumbent here for forty-one years, and a memorial near the west window of St Michael’s church bears his name and the names of his gifted daughters upon it. The grave of Charlotte and Emily Brontë is also marked by a brass. In 1895 a museum was opened by the Brontë society. There is a large worsted industry.

HAWSER (in sense and form as if from “hawse,” which, from the 16th-century form *halse*, is derived from Teutonic *hals*, neck, of which there is a Scandinavian use in the sense of the forepart of a ship; the two words are not etymologically connected; “hawser” is from an O. Fr. *haucier*, *hausser*, to raise, tow, hoist, from the Late Lat. *altiare*, to lift, *altus*, high), a small cable or thick rope used at sea for the purposes of mooring or warping, in the case of large vessels made of steel. When a cable or tow line is made of three or more small ropes it is said to be “hawser-laid.” The “hawse” of a ship is that part of the bows where the “hawse-holes” are made. These are two holes cut in the bows of a vessel for the cables to pass through, having small cast-iron pipes, called “hawse-pipes,” fitted into them to prevent abrasion. In bad weather at sea these holes are plugged up with “hawse-plugs” to prevent the water entering. The phrase to enter the service by the “hawse-holes” is used of those who have risen from before the mast to commissioned rank in the navy. When the ship is at anchor the space between her head and the anchor is called “hawse,” as in the phrase “athwart the hawse.” The term also applies to the position of the ship’s anchors when moored; when they are laid out in a line at right angles to the wind it is said to be moored with an “open hawse”; when both cables are laid out straight to their anchors without crossing, it is a “clear hawse.”

HAWTHORN, a city of Bourke county, Victoria, Australia, 4½ m. by rail E. of and suburban to Melbourne. Pop. (1901), 21,339. It is the seat of the important Methodist Ladies’ College. The majority of the inhabitants are professional and business men engaged in Melbourne and their residences are numerous at Hawthorn.

HAWTHORN (O. Eng. *haga-*, *hæg-*, or *hege-thorn*, *i.e.* “hedge-thorn”), the common name for *Crataegus*, in

botany, a genus of shrubs or small trees belonging to the natural order Rosaceae, native of the north temperate regions, especially America. It is represented in the British Isles by the hawthorn, white-thorn or may (Ger. *Hagedorn* and *Christdorn*; Fr. *aubépine*), C. *Oxyacantha*, a small, round-headed, much-branched tree, 10 to 20 ft. high, the branches often ending in single sharp spines. The leaves, which are deeply cut, are 1 to 2 in. long and very variable in shape. The flowers are sweet-scented, in flat-topped clusters, and ½ to ¾ in. in diameter, with five spreading white petals alternating with five persistent green sepals, a large number of stamens with pinkish-brown anthers, and one to three carpels sunk in the cup-shaped floral axis. The fruit, or haw, as in the apple, consists of the swollen floral axis, which is usually scarlet, and forms a fleshy envelope surrounding the hard stone.

The common hawthorn is a native of Europe as far north as 60½° in Sweden, and of North Africa, western Asia and Siberia, and has been naturalized in North America and Australia. It thrives best in dry soils, and in height varies from 4 or 5 to 12, 15 or, in exceptional cases, as much as between 20 and 30 ft. It may be propagated from seed or from cuttings. The seeds must be from ripe fruit, and if fresh gathered should be freed from pulp by maceration in water. They germinate only in the second year after sowing; in the course of their first year the seedlings attain a height of 6 to 12 in. Hawthorn has been for many centuries a favourite park and hedge plant in Europe, and numerous varieties have been developed by cultivation; these differ in the form of the leaf, the white, pink or red, single or double flowers, and the yellow, orange or red fruit. In England the hawthorn, owing to its hardiness and closeness of growth, has been employed for enclosure of land since the Roman occupation, but for ordinary field hedges it is believed it was generally in use till about the end of the 17th century. James I. of Scotland, in his *Quair*, ii. 14 (early 15th century), mentions the “hawthorn hedges knet” of Windsor Castle. The first hawthorn hedges in Scotland are said to have been planted by soldiers of Cromwell at Inch Buckling Brae in East Lothian and Finlarig in Perthshire. Annual pruning, to which the hawthorn is particularly amenable, is necessary if the hedge is to maintain its compactness and sturdiness. When the lower part shows a tendency to go bare the strong stems may be “plashed,” *i.e.* split, bent over and pegged to the ground so that new growths may start. The wood of the hawthorn is white in colour, with a yellowish tinge. Fresh cut it weighs 68 lb 12 oz. per cubic foot, and dry 57 lb 3 oz. It can seldom be obtained in large portions, and has the disadvantage of being apt to warp; its great hardness, however, renders it valuable for the manufacture of various articles, such as the cogs of mill-wheels, flails and mallets, and handles of hammers. Both green and dry it forms excellent fuel. The bark possesses tanning properties, and in Scotland in past times yielded with ferrous sulphate a black dye for wool. The leaves are eaten by cattle, and have been employed as a substitute for tea. Birds and deer feed upon the haws, which are used in the preparation of a fermented and highly intoxicating liquor. The hawthorn serves as a stock for grafting other trees. As an ornamental feature in landscapes, it is worthy of notice; and the pleasing shelter it affords and the beauty of its blossoms have frequently been alluded to by poets. The custom of employing the flowering branches for decorative purposes on the 1st of May is of very early origin; but since the alteration in the calendar the tree has rarely been in full bloom in England before the second week of that month. In the Scottish Highlands the flowers may be seen as late as the middle of June. The hawthorn has been regarded as the emblem of hope, and its branches are stated to have been carried by the ancient Greeks in wedding processions, and to have been used by them to deck the altar of Hymen. The supposition that the tree was the source of Christ’s crown of thorns gave rise doubtless to the tradition current among the French peasantry that it utters groans and cries on Good Friday, and probably also to the old popular superstition in Great Britain and Ireland that ill-luck attended the uprooting of hawthorns. Branches of the Glastonbury thorn, *C. Oxyacantha*, var. *praecox*, which flowers both in December and in spring, were formerly highly valued in England, on account of the legend that the tree was originally the staff of Joseph of Arimathea.

The number of species in the genus is from fifty to seventy, according to the view taken as to whether or not some of the forms, especially of those occurring in the United States, represent distinct species. *C. coccinea*, a native of Canada and the eastern United States, with bright scarlet fruits, was introduced into English gardens towards the end of the 17th century. *C. Crus-Galli*, with a somewhat similar distribution and introduced about the same time, is a very decorative species with showy, bright red fruit, often remaining on the branches till spring, and leaves assuming a brilliant scarlet and orange in the autumn; numerous varieties are in cultivation. *C. Pyracantha*, known in gardens as pyracantha, is evergreen and has white flowers, appearing in May, and fine scarlet fruits of the size of a pea which remain on the tree nearly all the winter. It is a native of south Europe and was introduced into Britain early in the 17th century.

HAWTHORNE, NATHANIEL (1804-1864), American writer, son of Nathaniel Hathorne (1776-1808), was born at Salem, Massachusetts, on the 4th of July 1804. The head of the American branch of the family, William Hathorne of Wilton, Wiltshire, England, emigrated with Winthrop and his company, and arrived at Salem Bay, Mass., on the 12th of June 1630. He had grants of land at Dorchester, where he resided for upwards of six years, when he was persuaded to remove to Salem by the tender of further grants of land there, it being considered a public benefit that he should become an inhabitant of that town. He represented his fellow-townsmen in the legislature, and served them in a military capacity as a captain in the first regular troop organized in Salem, which he led to victory through an Indian campaign in Maine. Originally a determined “Separatist,” and opposed to compulsion for conscience, he signalized himself when a magistrate by the active part which he took in the Quaker persecutions of the time (1657-1662), going so far on one occasion as to order the whipping of Anne Coleman and four other Friends through Salem, Boston and Dedham. He died, an old man, in the odour of sanctity, and left a good property to his son John, who inherited his father’s capacity and intolerance, and was in turn a legislator, a magistrate, a soldier and a bitter persecutor of witches. Before the death of Justice Hathorne in 1717, the destiny of the family suffered a sea-change, and they began to be noted as mariners. One of these seafaring Hathornes figured in the Revolution as a privateer, who had the good fortune to escape from a British prison-ship; and another, Captain Daniel Hathorne, has left his mark on early American ballad-lore. He too was a privateer, commander of the brig “Fair American,” which, cruising off the coast of Portugal, fell in with a British scow laden with troops for General Howe, which scow the bold Hathorne and his valiant crew at once engaged and fought for over an hour, until the vanquished enemy was glad to cut the Yankee grapplings and quickly bear away. The last of the Hathornes with whom we are concerned was a son of this sturdy old privateer, Nathaniel

Hathorne. He was born in 1776, and about the beginning of the 19th century married Miss Elizabeth Clarke Manning, a daughter of Richard Manning of Salem, whose ancestors emigrated to America about fifty years after the arrival of William Hathorne. Young Nathaniel took his hereditary place before the mast, passed from the forecastle to the cabin, made voyages to the East and West Indies, Brazil and Africa, and finally died of fever at Surinam, in the spring of 1808. He was the father of three children, the second of whom was the subject of this article. The form of the family name was changed by the latter to "Hawthorne" in his early manhood.

After the death of her husband Mrs Hawthorne removed to the house of her father with her little family of children. Of the boyhood of Nathaniel no particulars have reached us, except that he was fond of taking long walks alone, and that he used to declare to his mother that he would go to sea some time and would never return. Among the books that he is known to have read as a child were Shakespeare, Milton, Pope and Thomson, *The Castle of Indolence* being an especial favourite. In the autumn of 1818 bis mother removed to Raymond, a town in Cumberland county, Maine, where his uncle, Richard Manning, had built a large and ambitious dwelling. Here the lad resumed his solitary walks, exchanging the narrow streets of Salem for the boundless, primeval wilderness, and its sluggish harbour for the fresh bright waters of Sebago lake. He roamed the woods by day, with his gun and rod, and in the moonlight nights of winter skated upon the lake alone till midnight. When he found himself away from home, and wearied with his exercise, he took refuge in a log cabin where half a tree would be burning upon the hearth. He had by this time acquired a taste for writing, that showed itself in a little blank-book, in which he jotted down his woodland adventures and feelings, and which was remarkable for minute observation and nice perception of nature.

After a year's residence at Raymond, Nathaniel returned to Salem in order to prepare for college. He amused himself by publishing a manuscript periodical, which he called the *Spectator*, and which displayed considerable vivacity and talent. He speculated upon the profession that he would follow, with a sort of prophetic insight into his future. "I do not want to be a doctor and live by men's diseases," he wrote to his mother, "nor a minister to live by their sins, nor a lawyer and live by their quarrels. So I don't see that there is anything left for me but to be an author. How would you like some day to see a whole shelf full of books, written by your son, with 'Hawthorne's Works' printed on their backs?"

Nathaniel entered Bowdoin College, Brunswick, Maine, in the autumn of 1821, where he became acquainted with two students who were destined to distinction—Henry W. Longfellow and Franklin Pierce. He was an excellent classical scholar, his Latin compositions, even in his freshman year, being remarkable for their elegance, while his Greek (which was less) was good. He made graceful translations from the Roman poets, and wrote several English poems which were creditable to him. After graduation three years later (1825) he returned to Salem, and to a life of isolation. He devoted his mornings to study, his afternoons to writing, and his evenings to long walks along the rocky coast. He was scarcely known by sight to his townsmen, and he held so little communication with the members of his own family that his meals were frequently left at his locked door. He wrote largely, but destroyed many of his manuscripts, his taste was so difficult to please. He thought well enough, however, of one of his compositions to print it anonymously in 1828. A crude melodramatic story, entitled *Fanshawe*, it was unworthy even of his immature powers, and should never have been rescued from the oblivion which speedily overtook it. The name of Nathaniel Hawthorne finally became known to his countrymen as a writer in *The Token*, a holiday annual which was commenced in 1828 by Mr S. G. Goodrich (better known as "Peter Parley"), by whom it was conducted for fourteen years. This forgotten publication numbered among its contributors most of the prominent American writers of the time, none of whom appear to have added to their reputation in its pages, except the least popular of all—Hawthorne, who was for years the obscurest man of letters in America, though he gradually made admirers in a quiet way. His first public recognition came from England, where his genius was discovered in 1835 by Henry F. Chorley, one of the editors of the *Athenaeum*, in which he copied three of Hawthorne's most characteristic papers from *The Token*. He had but little encouragement to continue in literature, for Mr Goodrich was so much more a publisher than an author that he paid him wretchedly for his contributions, and still more wretchedly for his work upon an *American Magazine of Useful and Entertaining Knowledge*, which he persuaded him to edit. This author-publisher consented, however, at a later period (1837) to bring out a collection of Hawthorne's writings under the title of *Twice-told Tales*. A moderate edition was got rid of, but the great body of the reading public ignored the book altogether. It was generously reviewed in the *North American Review* by his college friend Longfellow, who said it came from the hand of a man of genius, and praised it for the exceeding beauty of its style, which was as clear as running waters.

The want of pecuniary success which had so far attended his authorship led Hawthorne to accept a situation which was tendered him by George Bancroft, the historian, collector of the port of Boston under the Democratic rule of President Van Buren. He was appointed a weigher in the custom-house at a salary of about $1200 a year, and entered upon the duties of his office, which consisted for the most part in measuring coal, salt and other bulky commodities on foreign vessels. It was irksome employment, but faithfully performed for two years, when he was superseded through a change in the national administration. Master of himself once more, he returned to Salem, where he remained until the spring of 1841, when he wrote a collection of children's stories entitled *Grandfather's Chair*, and joined an industrial association at West Roxbury, Mass. Brook Farm, as it was called, was a social Utopia, composed of a number of advanced thinkers, whose object was so to distribute manual labour as to give its members time for intellectual culture. The scheme worked admirably—on paper; but it was suited neither to the temperament nor the taste of Hawthorne, and after trying it patiently for nearly a year he returned to the everyday life of mankind.

One of Hawthorne's earliest admirers was Miss Sophia Peabody, a lady of Salem, whom he married in the summer of 1842. He made himself a new home in an old manse, at Concord, Mass., situated on historic ground, in sight of an old revolutionary battlefield, and devoted himself diligently to literature. He was known to the few by his *Twice-told Tales*, and to the many by his papers in the *Democratic Review*. He published in 1842 a further portion of *Grandfather's Chair*, and also a second volume of *Twice-told Tales*. He also edited, during 1845, the *African Journals* of Horatio Bridge, an officer of the navy, who had been at college with him; and in the following year he published in two volumes a collection of his later writings, under the title of *Mosses from an Old Manse*.

After a residence of nearly four years at Concord, Hawthorne returned to Salem, having been appointed surveyor of the custom-house of that port by a new Democratic administration. He filled the duties of this position until the incoming of the Whig administration again led to his retirement. He seems to have written little during his official term, but, as he had leisure enough and to spare, he read much, and pondered over subjects for future

stories. His next work, *The Scarlet Letter*, which was begun after his removal from the custom-house, was published in 1850. If there had been any doubt of his genius before, it was settled for ever by this powerful romance.

Shortly after the publication of *The Scarlet Letter* Hawthorne removed from Salem to Lenox, Berkshire, Mass., where he wrote *The House of the Seven Gables* (1851) and *The Wonder-Book* (1851). From Lenox he removed to West Newton, near Boston, Mass., where he wrote *The Blithedale Romance* (1852) and *The Snow Image and other Twice-told Tales* (1852). In the spring of 1852 he removed back to Concord, where he purchased an old house which he called The Wayside, and where he wrote a *Life of Franklin Pierce* (1852) and *Tanglewood Tales* (1853). Mr Pierce was the Democratic candidate for the presidency, and it was only at his urgent solicitation that Hawthorne consented to become his biographer. He declared that he would accept no office in case he were elected, lest it might compromise him; but his friends gave him such weighty reasons for reconsidering his decision that he accepted the consulate at Liverpool, which was understood to be one of the best gifts at the disposal of the president.

Hawthorne departed for Europe in the summer of 1853, and returned to the United States in the summer of 1860. Of the seven years which he passed in Europe five were spent in attending to the duties of his consulate at Liverpool, and in little journeys to Scotland, the Lakes and elsewhere, and the remaining two in France and Italy. They were quiet and uneventful, coloured by observation and reflection, as his note-books show, but productive of only one elaborate work, *Transformation, or The Marble Faun*, which he sketched out during his residence in Italy, and prepared for the press at Leamington, England, whence it was despatched to America and published in 1860.

Hawthorne took up his abode at The Wayside, not much richer than when he left it, and sat down at his desk once more with a heavy heart. He was surrounded by the throes of a great civil war, and the political party with which he had always acted was under a cloud. His friend ex-President Pierce was stigmatized as a traitor, and when Hawthorne dedicated his next book to him—a volume of English impressions entitled *Our Old Home* (1863)—it was at the risk of his own popularity. His pen was soon to be laid aside for ever; for, with the exception of the unfinished story of *Septimius Felton*, which was published after his death by his daughter Una (1872), and the fragment of *The Dolliver Romance*, the beginning of which was published in the *Atlantic Monthly* in July 1864, he wrote no more. His health gradually declined, his hair grew white as snow, and the once stalwart figure that in early manhood flashed along the airy cliffs and glittering sands sauntered idly on the little hill behind his house. In the beginning of April 1864 he made a short southern tour with his publisher Mr William D. Ticknor, and was benefited by the change of scene until he reached Philadelphia, where he was shocked by the sudden death of Mr Ticknor. He returned to The Wayside, and after a short season of rest joined his friend ex-President Pierce. He died at Plymouth, New Hampshire, on the 19th of May 1864, and five days later was buried at Sleepy Hollow, a beautiful cemetery at Concord, where he used to walk under the pines when he was living at the Old Manse, and where his ashes moulder under a simple stone, inscribed with the single word “Hawthorne.”

The writings of Hawthorne are marked by subtle imagination, curious power of analysis and exquisite purity of diction. He studied exceptional developments of character, and was fond of exploring secret crypts of emotion. His shorter stories are remarkable for originality and suggestiveness, and his larger ones are as absolute creations as *Hamlet* or *Undine*. Lacking the accomplishment of verse, he was in the highest sense a poet. His work is pervaded by a manly personality, and by an almost feminine delicacy and gentleness. He inherited the gravity of his Puritan ancestors without their superstition, and learned in his solitary meditations a knowledge of the night-side of life which would have filled them with suspicion. A profound anatomist of the heart, he was singularly free from morbidness, and in his darkest speculations concerning evil was robustly right-minded. He worshipped conscience with his intellectual as well as his moral nature; it is supreme in all he wrote. Besides these mental traits, he possessed the literary quality of style—a grace, a charm, a perfection of language which no other American writer ever possessed in the same degree, and which places him among the great masters of English prose.

His *Complete Writings* (22 vols., Boston, 1901) were edited, with introduction, including a bibliography, by H. S. Scudder. The standard authority for Hawthorne’s biography is *Nathaniel Hawthorne and his Wife* (2 vols., Boston, 1884), by his son Julian Hawthorne (b. 1846), himself a novelist and critic of distinction. See also Henry James, *Hawthorne* (London, 1879), in the “English Men of Letters” series; Julian Hawthorne, *Hawthorne and his Circle* (New York, 1903); a paper in R. H. Hutton’s *Essays Theological and Literary* (London, 1871); George B. Smith, *Poets and Novelists* (London, 1875); Moncure D. Conway, *Life of Nathaniel Hawthorne* (London, 1890, in the “Great Writers” series); Horatio Bridge, *Personal Recollections of Nathaniel Hawthorne* (New York, 1893); Rose Hawthorne Lathrop, *Memories of Hawthorne* (Boston, 1897); W. C. Lawton, *The New England Poets* (New York, 1898); Sir L. Stephen, *Hours in a Library* (1874); Annie Fields, *Nathaniel Hawthorne* (Boston, 1899); G. E. Woodberry, *Life of Hawthorne* (1902); and bibliography by N. E. Browne (1905).

(R. H. S.)

HAWTREY, CHARLES HENRY (1858-), English actor, was born at Eton, where his father was master of the lower school, and educated at Rugby and Oxford. He took to the stage in 1881, and in 1883 adapted von Moser’s *Bibliothekar* as *The Private Secretary*, which had an enormous success. He then appeared in London in a number of modern plays, in which he was conspicuous as a comedian. He was unapproachable for parts in which cool imperturbable lying constituted the leading characteristic. Among his later successes *A Message from Mars* was particularly popular in London and in America.

HAWTREY, EDWARD CRAVEN (1789-1862), English educationalist, was born at Burnham on the 7th of May

1789, the son of the vicar of the parish. He was educated at Eton and King's College, Cambridge, and in 1814 was appointed assistant master at Eton under Dr Keate. In 1834 he became headmaster of the college, and his administration was a vigorous one. New buildings were erected, including the school library and the sanatorium, the college chapel was restored, the Old Christopher Inn was closed, and the custom of "Montem," the collection by street begging of funds for the university expenses of the captain of the school, was suppressed. He is supposed to have suggested the prince consort's modern language prizes, while the prize for English essay he founded himself. In 1852 he became provost of Eton, and in 1854 vicar of Mapledurham. He died on the 27th of January 1862, and was buried in the Eton College chapel. On account of his command of languages ancient and modern, he was known in London as "the English Mezzofanti," and he was a book collector of the finest taste. Among his own books are some excellent translations from the English into Italian, German and Greek. He had a considerable reputation as a writer of English hexameters and as a judge of Homeric translation.

HAXO, FRANÇOIS NICOLAS BENOÎT, Baron (1774-1838), French general and military engineer, was born at Lunéville on the 24th of June 1774, and entered the Engineers in 1793. He remained unknown, doing duty as a regimental officer for many years, until, as major, he had his first chance of distinction in the second siege of Saragossa in 1809, after which Napoleon made him a colonel. Haxo took part in the campaign of Wagram, and then returned to the Peninsula to direct the siege operations of Suchet's army in Catalonia and Valencia. In 1810 he was made general of brigade, in 1811 a baron, and in the same year he was employed in preparing the occupied fortresses of Germany against a possible Russian invasion. In 1812 he was chief engineer of Davout's I. corps, and after the retreat from Moscow he was made general of division. In 1813 he constructed the works around Hamburg which made possible the famous defence of that fortress by Davout, and commanded the Guard Engineers until he fell into the enemy's hands at Kulm. After the Restoration Louis XVIII. wished to give Haxo a command in the Royal Guards, but the general remained faithful to Napoleon, and in the Hundred Days laid out the provisional fortifications of Paris and fought at Waterloo. It was, however, after the second Restoration that the best work of his career as a military engineer was done. As inspector-general he managed, though not without meeting considerable opposition, to reconstruct in accordance with the requirements of the time, and the designs which he had evolved to meet them, the old Vauban and Cormontaigne fortresses which had failed to check the invasions of 1814 and 1815. For his services he was made a peer of France by Louis Philippe (1832). Soon after this came the French intervention in Belgium and the famous scientific siege of Antwerp citadel. Under Marshal Gérard Haxo directed the besiegers and completely outmatched the opposing engineers, the fortress being reduced to surrender after a siege of a little more than three weeks (December 23, 1832). He was after this regarded as the first engineer in Europe, and his latter years were spent in urging upon the government and the French people the fortification of Paris and Lyons, a project which was partly realized in his time and after his death fully carried out. General Haxo died at Paris on the 25th of June 1838. He wrote *Mémoire sur le figuré du terrain dans les cartes topographiques* (Paris, N.D.), and a memoir of General Dejean (1824).

HAXTHAUSEN, AUGUST FRANZ LUDWIG MARIA, Freiherr von (1792-1866), German political economist, was born near Paderborn in Westphalia on the 3rd of February 1792. Having studied at the school of mining at Klausthal, and having served in the Hanoverian army, he entered the university of Göttingen in 1815. Finishing his course there in 1818 he was engaged in managing his estates and in studying the land laws. The result of his studies appeared in 1829 when he published *Über die Agrarverfassung in den Fürstentümern Paderborn und Corvey*, a work which attracted much attention and which procured for its author a commission to investigate and report upon the land laws of the Prussian provinces with a view to a new code. After nine years of labour he published in 1839 an exhaustive treatise, *Die ländliche Verfassung in der Provinz Preussen*, and in 1843, at the request of the emperor Nicholas, he undertook a similar work for Russia, the fruits of his investigations in that country being contained in his *Studien über die innern Zustände des Volkslebens, und insbesondere die ländlichen Einrichtungen Russlands* (Hanover, 1847-1852). He received various honours, was a member of the combined diet in Berlin in 1847 and 1848, and afterwards of the Prussian upper house. Haxthausen died at Hanover on the 31st of December 1866.

In addition to the works already mentioned he wrote *Die ländliche Verfassung Russlands* (Leipzig, 1866). His *Studien* has been translated into French and into English by R. Farie as *The Russian Empire* (1856). Other works of his which have appeared in English are: *Transcaucasia*; *Sketches of the Nations and Races between the Black Sea and the Caspian* (1854), and *The Tribes of the Caucasus* (1855). Haxthausen edited *Das konstitutionelle Prinzip* (Leipzig, 1864), a collection of political writings by various authors, which has been translated into French (1865).

HAY, GEORGE (1729-1811), Scottish Roman Catholic divine, was born at Edinburgh on the 24th of August 1729. He was accused of sympathizing with the rebellion of 1745 and served a term of imprisonment 1746-1747. He then entered the Roman Catholic Church, studied in the Scots College at Rome, and in 1759 accompanied John Geddes (1735-1799), afterwards bishop of Morocco, on a Scottish mission. Ten years later he was appointed bishop of Daulis *in partibus* and coadjutor to Bishop James Grant (1706-1778). In 1778 he became vicar apostolic of the lowland district. During the Protestant riots in Edinburgh in 1779 his furniture and library were destroyed by fire. From 1788 to 1793 he was in charge of the Scalan seminary; in 1802 he retired to that of Aquhorties near Inverury which he had founded in 1799. He died there on the 15th of October 1811.

His theological works, including *The Sincere Christian, The Devout Christian, The Pious Christian* and *The Scripture Doctrine of Miracles*, were edited by Bishop Strain in 1871-1873.

HAY, GILBERT, or "Sir Gilbert the Haye" (fl. 1450), Scottish poet and translator, was perhaps a kinsman of the house of Errol. If he be the student named in the registers of the university of St Andrews in 1418-1419, his birth may be fixed about 1403. He was in France in 1432, perhaps some years earlier, for a "Gilbert de la Haye" is mentioned as present at Reims, in July 1430, at the coronation of Charles VII. He has left it on record, in the Prologue to his *Buke of the Law of Armys*, that he was "chaumerlayn umquhyle to the maist worthy King Charles of France." In 1456 he was back in Scotland, in the service of the chancellor, William, earl of Orkney and Caithness, "in his castell of Rosselyn," south of Edinburgh. The date of his death is unknown.

Hay is named by Dunbar (*q.v.*) in his *Lament for the Makaris*, and by Sir David Lyndsay (*q.v.*) in his *Testament and Complaynt of the Papyngo*. His only political work is *The Buik of Alexander the Conquerour*, of which a portion, in copy, remains at Taymouth Castle. He has left three translations, extant in one volume (in old binding) in the collection of Abbotsford: (*a*) *The Buke of the Law of Armys* or *The Buke of Bataillis*, a translation of Honoré Bonet's *Arbre des batailles*; (*b*) *The Buke of the Order of Knichthood* from the *Livre de l'ordre de chevalerie*; and (*c*) *The Buke of the Governaunce of Princes*, from a French version of the pseudo-Aristotelian *Secreta secretorum*. The second of these precedes Caxton's independent translation by at least ten years.

For the *Buik of Alexander* see Albert Herrmann's *The Taymouth Castle MS. of Sir Gilbert Hay's Buik, &c.* (Berlin, 1898). The complete Abbotsford MS. has been reprinted by the Scottish Text Society (ed. J. H. Stevenson). The first volume, containing *The Buke of the Law of Armys*, appeared in 1901. *The Order of Knichthood* was printed by David Laing for the Abbotsford Club (1847). See also S.T.S. edition (*u.s.*) "Introduction" and Gregory Smith's *Specimens of Middle Scots*, in which annotated extracts are given from the Abbotsford MS., the oldest known example of literary Scots prose.

HAY, JOHN (1838-1905), American statesman and author, was born at Salem, Indiana, on the 8th of October 1838. He graduated from Brown University in 1858, studied law in the office of Abraham Lincoln, was admitted to the bar in Springfield, Illinois, in 1861, and soon afterwards was selected by President Lincoln as assistant private secretary, in which capacity he served till the president's death, being associated with John George Nicolay (1832-1901). Hay was secretary of the U.S. legation at Paris in 1865-1867, at Vienna in 1867-1869 and at Madrid in 1869-1870. After his return he was for five years an editorial writer on the New York *Tribune*; in 1879-1881 he was first assistant secretary of state to W. M. Evarts; and in 1881 was a delegate to the International Sanitary Conference, which met in Washington, D.C., and of which he was chosen president. Upon the inauguration of President McKinley in 1897 Hay was appointed ambassador to Great Britain, from which post he was transferred in 1898 to that of secretary of state, succeeding W. R. Day, who was sent to Paris as a member of the Peace Conference. He remained in this office until his death at Newburg, New Hampshire, on the 1st of July 1905. He directed the peace negotiations with Spain after the war of 1898, and not only secured American interests in the imbroglio caused by the Boxers in China, but grasped the opportunity to insist on "the administrative entity" of China; influenced the powers to declare publicly for the "open door" in China; challenged Russia as to her intentions in Manchuria, securing a promise to evacuate the country on the 8th of October 1903; and in 1904 again urged "the administrative entity" of China and took the initiative in inducing Russia and Japan to "localize and limit" the area of hostilities. It was largely due to his tact and good management, in concert with Lord Pauncefote, the British ambassador, that negotiations for abrogating the Clayton-Bulwer Treaty and for making a new treaty with Great Britain regarding the Isthmian Canal were successfully concluded at the end of 1901; subsequently he negotiated treaties with Colombia and with Panama, looking towards the construction by the United States of a trans-isthmian canal. He also arranged the settlement of difficulties with Germany over Samoa in December 1899, and the settlement, by joint commission, of the question concerning the disputed Alaskan boundary in 1903. John Hay was a man of quiet and unassuming disposition, whose training in diplomacy gave a cool and judicious character to his statesmanship. As secretary of state under Presidents McKinley and Roosevelt his guidance was invaluable during a rather critical period in foreign affairs, and no man of his time did more to create confidence in the increased interest taken by the United States in international matters. He also represented, in another capacity, the best American traditions—namely in literature. He published *Pike County Ballads* (1871)—the most famous being "Little Breeches"—a volume worthy to rank with Bret Harte, if not with the Lowell of the *Biglow Papers*; *Castilian Days* (1871), recording his observations in Spain; and a volume of *Poems* (1890); with John G. Nicolay he wrote *Abraham Lincoln: A History* (10 vols., 1890), a monumental work indispensable to the student of the Civil War period in America, and published an edition of Lincoln's *Complete Works* (2 vols., 1894). The authorship of the brilliant novel *The Breadwinners* (1883) is now certainly attributed to him. Hay was an excellent public speaker: some of his best addresses are *In Praise of Omar*; *On the Unveiling of the Bust of Sir Walter Scott in Westminster Abbey*, May 21, 1897; and a memorial address in honour of President McKinley.

The best of his previously unpublished speeches appeared in *Addresses of John Hay* (1906).

HAY, a town of Waradgery county, New South Wales, Australia, on the Murrumbidgee river, 454 m. by rail W.S.W. of Sydney. Pop. (1901), 3012. It is the cathedral town of the Anglican diocese of Riverina, the terminus of

the South Western railway, and the principal depot for the wool produced at the numerous stations on the banks of the Murrumbidgee and Lachlan rivers.

HAY, a market town and urban district of Breconshire, south Wales, on the Hereford and Brecon section of the Midland railway, 164½ m. from London, 20 m. W. of Hereford and 17 m. N.E. of Brecon by rail. Pop. (1901), 1680. The Golden Valley railway to Pontrilas (18¾ m.), now a branch of the Great Western, also starts from Hay. The town occupies rising ground on the south (right) bank of the Wye, which here separates the counties of Brecknock and Radnor but immediately below enters Herefordshire, from which the town is separated on the E. by the river Dulas.

Leland and Camden ascribe a Roman origin to the town, and the former states that quantities of Roman coin (called by the country people "Jews' money") and some pottery had been found near by, but of this no other record is known. The Wye valley in this district served as the gate between the present counties of Brecknock and Hereford, and, though Welsh continued for two or three centuries after the Norman Conquest to be the spoken language of the adjoining part of Herefordshire south of the Wye (known as Archenfield), there must have been a "burh" serving as a Mercian outpost at Glasbury, 4 m. W. of Hay, which was itself several miles west of Offa's Dyke. But the earliest settlement at Hay probably dates from the Norman conquest of the district by Bernard Newmarch about 1088 (in which year he granted Glasbury, probably as the first fruits of his invasion, to St Peter's, Gloucester). The manor of Hay, which probably corresponded to some existing Welsh division, he gave to Sir Philip Walwyn, but it soon reverted to the donor, and its subsequent devolution down to its forfeiture to the crown as part of the duke of Buckingham's estate in 1521, was identical with that of the lordship of Brecknock (see Breconshire). The castle, which was probably built in Newmarch's time and rebuilt by his great-grandson William de Breos, passed on the latter's attainder to the crown, but was again seized by de Breos's second son, Giles, bishop of Hereford, in 1215, and retaken by King John in the following year. In 1231 it was burnt by Llewelyn ab Iorwerth, and in the Barons' War it was taken in 1263 by Prince Edward, but in the following year was burnt by Simon Montfort and the last Llewelyn. From the 16th century the castle has been used as a private residence.

The Welsh name of the town is Y Gelli ("the wood"), or formerly in full (Y) Gelli ganddryll (literally "the wood all to pieces"), which roughly corresponds to *Sepes Inscissa*, by which name Walter Map (a native of the district) designates it. Its Norman name, La Haia (from the Fr. *haie*, cf. English "hedge"), was probably intended as a translation of Gelli. The same word is found in Urishay and Oldhay, both between Hay and the Golden Valley. The town is still locally called *the* Hay, as it also is by Leland. 106

Even down to Leland's time Hay was surrounded by a "right strong wall," which had three gates and a postern, but the town within the wall has "wonderfully decayed," its ruin being ascribed to Owen Glendower, while to the west of it was a flourishing suburb with the church of St Mary on a precipitous eminence overlooking the river. This was rebuilt in 1834. The old parish church of St John within the walls, used as a school-house in the 17th century, has entirely disappeared. The Baptists, Calvinistic Methodists, Congregationalists and Primitive Methodists have a chapel each. The other public buildings are the market house (1833); a masonic hall, formerly the town hall, its basement still serving as a cheese market; a clock tower (1884); parish hall (1890); and a drill hall. The Wye is here crossed by an iron bridge built in 1864. There are also eighteen almshouses for poor women, built and endowed by Miss Frances Harley in 1832-1836, and Gwyn's almshouses for six aged persons, founded in 1702 and rebuilt in 1878.

Scarcely anything but provisions are sold in the weekly market, the farmers of the district now resorting to the markets of Brecon and Hereford. There are good monthly stock fairs and a hiring fair in May. There is rich agricultural land in the district.

Hay was reputed to be a borough by prescription, but it never had any municipal institutions. Its manor, like that of Talgarth, consisted of an Englishry and a Welshery, the latter, known as Haya Wallensis, comprising the parish of Llanigon with the hamlet of Glynfach, and in this Welsh tenures and customs prevailed. The manor is specially mentioned in the act of Henry VIII. (1535) as one of those which were then taken to constitute the new county of Brecknock.

(D. Ll. T.)

HAY (a word common in various forms to Teutonic languages; cf. Ger. *Heu*, Dutch *hooi;* the root from which it is derived, meaning "to cut," is also seen in "to hew"; cf. "hoe"), grass mown and dried in the sun and used as fodder for cattle. It is properly applied only to the grass when cut, but is often also used of the standing crop. (See *Haymaking* below). Another word "hay," meaning a fence, must be distinguished; the root from which it is derived is seen in its doublet "hedge," cf. "haw-thorn," *i.e.* "hedge thorn." In this sense it survives in legal history in "hay bote," *i.e.* hedge-bote, the right of a tenant, copyholder, &c. to take wood to repair fences, hedges, &c. (see Estovers), and also in "hayward," an official of a manor whose duty was to protect the enclosed lands from cattle breaking out of the common land.

Haymaking.—The term "haymaking" signifies the process of drying and curing grass or other herbage so as to fit it for storage in stacks or sheds for future use. As a regular part of farm work it was unknown in ancient times. Before its introduction into Great Britain the animals intended for beef and mutton were slaughtered in autumn and salted down; the others were turned out to fend for themselves, and often lost all the fat in winter they had gained the previous summer. The introduction of haymaking gave unlimited scope for the production of winter food, and improved treatment of live stock became possible.

Though every country has its own methods of haymaking, the principal stages in the process everywhere are:

(1) mowing, (2) drying or “making,” (3) “carrying” and storage in stacks or sheds.

In a wet district such as the west of Ireland the “making” is a difficult affair and large quantities of hay are often spoiled, while much labour has to be spent in cocking up, turning over, ricking, &c., before it is fit to be stacked up. On the other hand, in the dry districts of south-eastern England it is often possible to cut and carry the hay without any special “making,” as the sun and wind will dry it quickly enough to fit it for stacking up without the expenditure of much labour. This rule also applies to dry countries like the United States and several of the British colonies, and it is for this reason that most of the modern implements used for quickly handling a bulk of hay have been invented or improved in those countries. Forage of all kinds intended for hay should be cut at or before the flowering stage if possible. The full growth and food value of the plant are reached then, and further change consists in the formation and ripening of the seed at the expense of the leaves and stems, leaving these hard and woody and of less feeding value.

Grass or other forage, when growing, contains a large proportion of water, and after cutting must be left to dry in the sun and wind, a process which may at times be assisted by turning over or shaking up. In fine weather in the south of England grass is sufficiently dried in from two to four days to be stacked straight away. In Scotland or other districts where the rainfall is heavy and the air moist, it is first put into small field-ricks or “pykes” of from 10 to 20 cwt. each. In the drying process the 75% of water usually present in grass should be reduced to approximately 15% in the hay, and in wet or broken weather it is exceedingly difficult to secure this reduction. With a heavy crop or in damp weather grass may need turning in the swathe, raking up into “windrows,” and then making up into cocks or “quiles,” *i.e.* round beehive-like heaps, before it can be “carried.” A properly made cock will stand bad weather for a week, as only the outside straws are weathered, and therefore the hay is kept fresh and green. Indeed, it is a good rule always to cock hay, for even in sunny weather undue exposure ends in bleaching, which is almost as detrimental to its quality as wet-weathering.

In the last quarter of the 19th century the methods of haymaking were completely changed, and even some of the principles underlying its practice were revised. Generally speaking, before that time the only implements used were the scythe, the rake and the pitchfork; nowadays—with the exception of the pitchfork—these implements are seldom used, except where the work is carried on in a small way. Instead of the scythe, for instance, the mowing machine is employed for cutting the crop, and with a modern improved machine taking a swathe as wide as 5 or 6 ft. some 10 acres per day can easily be mown by one man and a pair of horses (figs. 1 and 2).

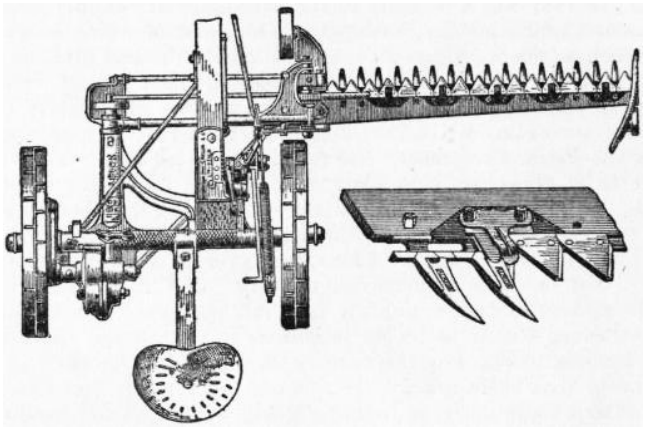


Fig. 1.—Mower (viewed from above) with enlarged detail of Blade. (Harrison, M‘Gregor & Co.)

It will be seen from the figures that a mower consists of three principal parts: (1) a truck or carriage on two high wheels carrying the driving gear; (2) the cutting mechanism, comprising a reciprocating knife or sickle operating through slots in the guards or “fingers” fastened to the cutting bar which projects to either the right or left of the truck; and (3) the pole with whipple-trees, by which the horses are attached to give the motive power. The reciprocating knife has a separate blade to correspond to each finger, and is driven by a connecting rod and crank on the fore part of the truck. In work the pointed “fingers” pass in between the stalks of grass and the knives shear them off, acting against the fingers as the crank drives them backwards and forwards. In the swathe of grass left behind by the machine, the stalks are, in a manner, thatched over one another, so that it is in the best position for drying in the sun, or, per contra, for shedding off the rain if the weather is wet. This is a great point in favour of the use of the machine, because the swathe left by the scythe required to be “tedded” out, *i.e.* the grass had to be shaken out or spread to allow it to be more easily dried.

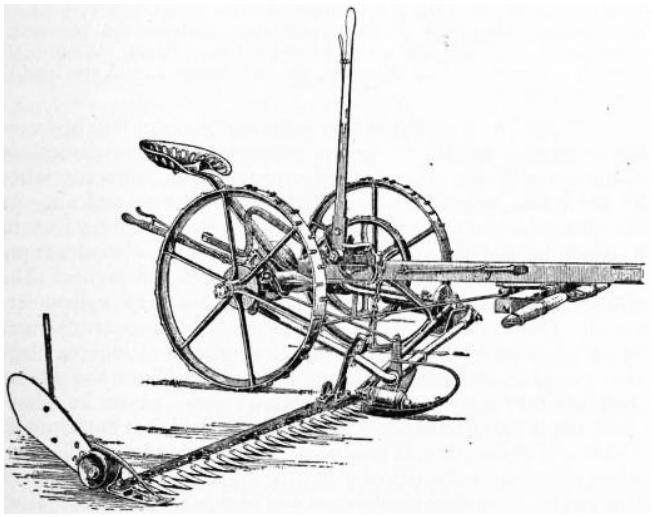


FIG. 2.—Mower (side view).

After the grass has lain in the swathe a day or two till it is partly dried, it is necessary to turn it over to dry the other side. This used to be done with the hand rake, and a band of men or women would advance in *échelon* across a field, each turning the swathe of hay by regular strokes of the rake at each step: "driving the dusky wave along the mead" as described in Thomson's *Seasons.* This part of the work was the act of "haymaking" proper, and the subject of much sentiment in both prose and poetry. The swathes as laid by the mowing machine lent themselves to this treatment in the old days when the swathe was only some 3 to 4 ft. wide, but with the wide cut of the present day it becomes impracticable. If the hay is turned and "made" at all, the operation is now generally performed by a machine made for the purpose. There is a wide selection of "tedders" or "kickers," and "swathe-turners" on the market. The one illustrated in fig. 3 is the first prize winner at the Royal Agricultural Society's trials (1907). It takes two swathes at a time, and it will be seen that the working part consists of a wheel or circle of prongs or tines, which revolves *across* the line of the swathe. Each prong in turn catches the edge of the swathe of grass and kicks it up and over, thus turning it and leaving it loose for the wind to blow through.

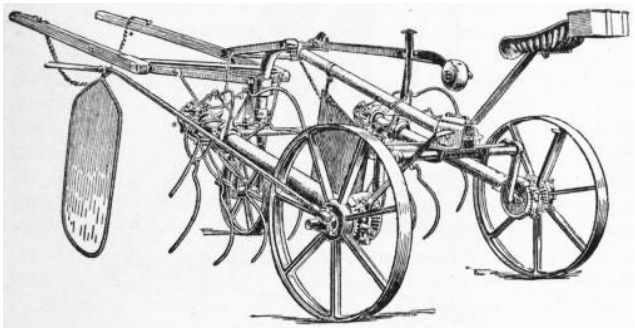


FIG. 3.—Swathe-turner. (Blackstone & Co., Ltd.).

The "kicker" is mounted on two wheels, and carries in bearings at the rear of the frame a multiple-cranked shaft, provided with a series of forks sleeved on the cranks and having their upper ends connected by links to the frame. As the crankshaft is driven from the wheels by proper gearing the forks move upward and forward, then downward and rearward, in an elliptical path, and kick the hay sharply to the rear, thus scattering and turning it.

It is a moot point, however, whether grass should be turned at all, or left to "make" as it falls from the mowing machine. In a dry sunny season and with a moderate crop it is only a waste of time and labour to turn it, for it will be cured quite well as it lies, especially if raked up into loose "windrows" a little before carrying to the stack. On the other hand, where the crop is heavy (say over 2 tons per acre) or the climate is wet, turning will be necessary.

With heavy crops of clover, lucerne and similar forage crops, turning may be an absolute necessity, because a thick swathe of a succulent crop will be difficult to dry or "make" excepting in hot sunny weather, but with ordinary meadow grass or with a mixture of "artificial" grasses it may often be dispensed with. It must be remembered, however, that the process of turning breaks the stalks (thus letting out the albuminoid and saccharine juices), and should be avoided as far as possible in order to save both labour and the quality of the hay.

One of the earlier mechanical inventions in connexion with haymaking was that of the horse rake (fig. 4). Before its introduction the hay, after making, had to be gathered up by the hand rake—a tedious and laborious process—but the introduction of this implement, whereby one horse and one man can do work before requiring six or eight men, marked a great advance. The horse rake is a framework on two wheels carrying hinged steel teeth placed 3 in. apart, so that their points slide along the ground below the hay. In work it gathers up the loose hay, and when full a tipping mechanism permits the emptying of the load.

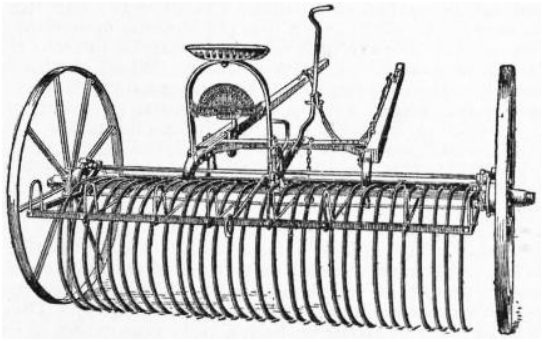


Fig. 4.—Self-acting Horse Rake. (Ransomes, Sims & Jefferies, Ltd.).

The tipping is effected by pulling down a handle which sets a leverage device in motion, whereby the teeth are lifted up and the load of hay dropped below and left behind. On some rakes a clutch is worked by the driver's foot, and this put in action causes the ordinary forward revolving motion of the driving wheels to do the tipping.

The loads are tipped end to end as the rake passes and repasses at the work, and thus the hay is left loose in long parallel rows on the field. Each row is termed a "windrow," the passage of the wind through the hay greatly aiding the drying and "making" thereof. When hay is in this form it may either be carried direct to the stack if sufficiently "made," or else put into cocks to season a little longer. The original width of horse rakes was about 8 ft., but nowadays they range up to 16 and 18 ft. The width should be suited to that of the swathes as left by the mower, and as the latter is now made to cut 5 and 6 ft. wide, it is necessary to have a rake to cover two widths. The very wide rakes are only suitable for even, level land; those of less width must be used where the land has been laid down in ridge and furrow. As the swathes lie in long parallel rows, it is a great convenience in working for two to be taken in width at a time, so that the horse can walk in the space between.

The side-delivery rake, a development of the ordinary horse rake, is a useful implement, adapted for gathering and laying a quantity of hay in one continuous windrow. It is customary with this to go up the field throwing two swathes to one side, and then back down on the adjacent swathes, so that thus four are thrown into one central windrow. The implement consists of a frame carried on two wheels with shafts for a horse; across the frame are fixed travelling or revolving prongs of different varieties which pick up the hay off the ground and pass it along sideways across the line of travel, leaving it in one continuous line. Some makes of swathe-turners are designed to do this work as well as the turning of the hay.

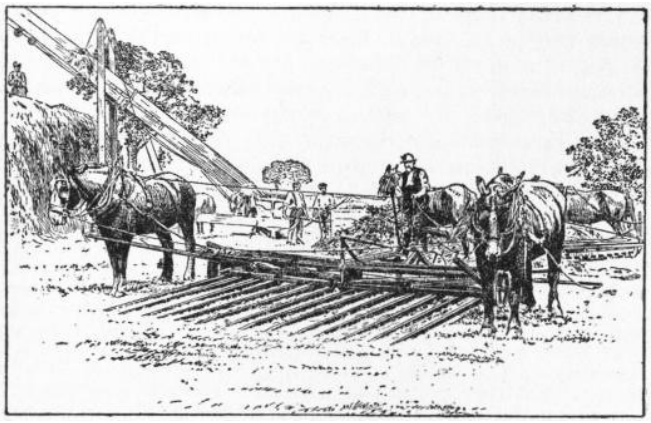


Fig. 5.—Sweep Rake.

Perhaps the greatest improvement of modern times is the method of carrying the hay from the field to the stack. An American invention known as the sweep rake was introduced by the writer into England in 1894, and now in many modified forms is in very general use in the Midlands and south of England, where the hay is carried from the cock, windrow or swathe straight to the stack. This implement consists of a wheeled framework fitted with long wooden iron-pointed teeth which slide along the ground; two horses are yoked to it—one at each side—the driver directing from a central seat behind the framework. When in use it is taken to the farther end of a row of cocks, a windrow, or even to a row of untouched swathes on the ground, and walked forward. As it advances it scoops up a load, and when full is drawn to where the stack is being erected (fig. 5). In ordinary circumstances the sweep rake will pick up at a load two-thirds of an ordinary cart-load, but, where the hay is in good order and it is swept down hill, a whole one-horse cart-load can be carried each time. The drier the hay the better will the sweep rake work, and if it is not working sweetly but has a tendency to clog or make rolls of hay, it may be inferred that the latter is not in a condition fit for stacking. Where the loads must be taken through a gateway or a long distance to the stack, it is necessary to use carts or wagons, and the loading of these in the field out of the windrow is largely expedited by the use of the "loader," also an American invention of which many varieties are in the market. Generally speaking, it consists of a frame carrying a revolving web with tines or prongs. The implement is hitched on behind a cart or wagon, and as it moves forward the web picks the loose hay off the ground and delivers it on the top, where a man levels it with a pitchfork and builds it into a load ready to move to the stack. At the stack the most convenient method of transferring the hay from a cart, wagon or sweep rake is the elevator, a tall structure with a revolving web carrying teeth or spikes (fig. 6). The hay is thrown in forkfuls on at the bottom, a pony-gear causes the web to revolve, and the hay is carried in an almost continuous stream up the elevator and dropped over the top on to the stack. The whole implement is made to fold down, and is provided with wheels so that it can be moved from stack to stack. In the older forms there is a "hopper" or box at the bottom into which the hay is thrown to enable the teeth of the web to catch it, but in the modern forms there is no hopper, the web reaching down to the ground so that hay can be picked up from the ground level. Where the hay is brought to the stack on carts or wagons it can be unloaded by means of the horse fork. This is an adaptation of the principle of the ordinary crane; a central pole and jib are supported by guy ropes, and from the end of the jib a rope runs over a pulley. At the end of this rope is a "fork" formed of two sets of prongs which open and shut. This is lowered on to the load of hay, the prongs are forced into it, a horse pulls at the other end of the rope, and the

prongs close and “grab” several cwt. of hay which are swung up and dropped on the stack. In this way a large cart or wagon load is hoisted on to the stack in three or four “forkfuls.” The horse fork is not suited for use with the sweep rake, however, because the hay is brought up to the stack in a loose flat heap without sufficient body for the fork to get hold of.

In northern and wet districts of England it is customary to “make” the hay as in the south, but it is then built up into little stacks in the field where it grew (ricks, pykes or tramp-cocks are names used for these in different districts), each containing about 10 to 15 cwt. These are made in the same way as the ordinary stack—one person on top building, another on the ground pitching up the hay—and are carefully roped and raked down. In these the hay gets a preliminary sweating or tempering while at the same time it is rendered safe from the weather, and, thus stored, it may remain for weeks before being carried to the big stacks at the homestead. The practice of putting up the hay into little ricks in the field has brought about the introduction of another set of implements for carrying these to the stackyard.

Various forms of rick-lifters are in use, the characteristic feature of which is a tipping platform on wheels to which a horse is attached between shafts. The vehicle is backed against a rick, and a chain passed round the bottom of the latter, which is then pulled up the slant of the tipped platform by means of a small windlass. When the centre of the balance is passed, the platform carrying the rick tips back to the level, and the whole is thus loaded ready to move. Another variety of loader is formed of three shear-legs with block and tackle. These are placed over a rick, under which the grab-irons are passed, and the whole hauled up by a horse. When high enough a cart is backed in below, the rick lowered, and the load is ready to carry away.

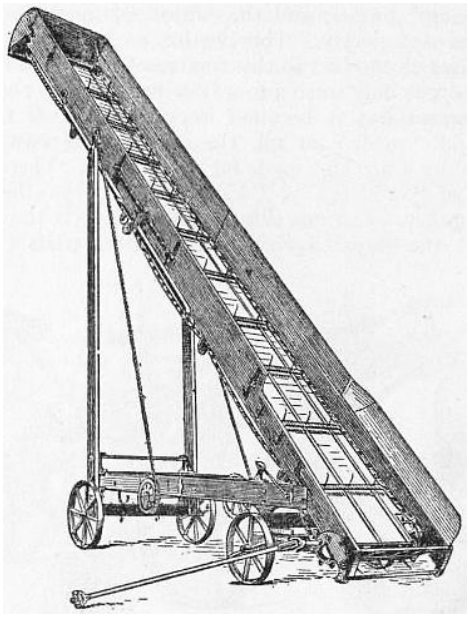


Fig. 6.—Hay Elevator. (Maldon Iron Works Co.).

When put into a stack the next stage in curing the hay begins—the heating or sweating. In the growing plants the tissues are composed of living cells containing protoplasm. This continues its life action as long as it gets sufficient moisture and air. As life action involves the development of heat, the temperature in a confined space like a stack where the heat is not dissipated may rise to such a point that spontaneous combustion occurs. The chemical or physical reasons for this are not very well understood. The starch and sugar contents of the tissues are changed in part into alcohol. In the analogous process of making silage (*i.e.* stacking wet green grass in a closed building) the alcohol develops into acetic acid, thus making “sour” silage. In a haystack the intermediate body, acetaldehyde, which is both inflammable and suffocating, is produced—men having been suffocated when sleeping on the top of a heating stack. The production of this gas leads to slow combustion and ignition. One explanation of the process is that the protoplasm of the cells acts as a fermenting agent (like yeast) until a temperature sufficient to kill germ life, say 150° F., is reached, beyond which the action which leads up to the temperature of ignition must be purely chemical. If the stack contains no air at all it does not heat, or if it has excess of air it is safe. The danger-point in a stack is the centre at about 6 ft. from the ground; below this the weight of the hay itself squeezes out the air, and at the sides and top the heat is dissipated outwards. If a stack shows signs of overheating (a process that may take weeks or even months to develop) it can be saved by cutting a gap in the side of it with the hay knife, thus letting out the heat and fumes, and admitting fresh air to the centre. The essential point in haymaking is that the hay should be dried sufficiently to ensure the sweating process in the stack reaching no further than the stage of the formation of sugar. Good hay should come out green and with the odour of coumarin—to which is due the scent of new-mown hay. Only part of a stack can ever attain to a perfect state: the tops, bottom and outsides are generally wasted by the weather after stacking, while there may be three or four intermediate qualities present. In some markets hay that has been sweated till it is brown in colour is desired, but for general purposes green hay is the best.

Hay often becomes musty when the weather during “making” has been too wet to allow of its getting sufficiently dry for stacking. Mustiness is caused by the growth of various moulds (*Penicillium*, *Aspergillus*, &c.) on the damp stems, with the result that the hay when cut out for use is dusty and shows white streaks and spots. Such hay is inferior to that which has been overheated, and in practice it is found that a strong heating will prevent mouldiness by killing the fungi.

Heavy lush crops—especially those containing a large proportion of clover or other leguminous plants—are proportionately more difficult to “make” than light grassy ones. Thus, if one ton is taken as a fair yield off one acre, a two-ton crop will probably require four times as much work in curing as the smaller crop. In the treacherous climate of Great Britain hay is frequently spoiled because the weather does not hold good long enough to permit of its being properly “made.” Consequently many experienced haymakers regard a moderate

crop as the more profitable because it can be stacked in first-class condition, whereas a heavy crop forced by "high farming" is grown at a loss, owing to the weather waste and the heavier expenses involved in securing it.

In handling or marketing out of the stack hay may be transported loose on a cart or wagon, but it is more usual to truss or bale it. A truss is a rectangular block cut out of the solid stack, usually about 3 ft. long and 2 ft. wide, and of a thickness sufficient to give a weight of 56 lb: thirty-six of these constitute a "load" of 18 cwt.—the unit of sale in many markets. A truss is generally bound with two bands of twisted straw, but if it has to undergo much handling it is compressed in a hay-press and tied with two string bands. In some districts a baler is used: a square box with a compressible lid. The hay is tumbled in loose, the lid forced down by a leverage arrangement and the bale tied by three strings. It is usually made to weigh from 1 to 1½ cwt. The customs of different markets vary very much in their methods of handling hay, and in the overseas hay trade the size and style of the trusses or bales are adapted for packing on ship-board.

HAYASHI, TADASU, Count (1850-), Japanese statesman, was born in Tōkyō (then Yedo), and was one of the first batch of students sent by the Tokugawa government to study in England. He returned on the eve of the abolition of the Shōgunate, and followed Enomoto (*q.v.*) when the latter, sailing with the Tokugawa fleet to Yezo, attempted to establish a republic there in defiance of the newly organized government of the emperor. Thrown into prison on account of this affair, Hayashi did not obtain office until 1871. Thereafter he rose rapidly, until, after a long period of service as vice-minister of foreign affairs, he was appointed to represent his country first in Peking, then in St Petersburg and finally in London, where he acted an important part in negotiating the first Anglo-Japanese Alliance, for which service he received the title of viscount. He remained in London throughout the Russo-Japanese War, and was the first Japanese ambassador at the court of St James after the war. Returning to Tōkyō in 1906 to take the portfolio of foreign affairs, he remained in office until the resignation of the Saionji cabinet in 1908. He was raised to the rank of count for eminent services performed during the war between his country and Russia, and in connexion with the second Anglo-Japanese Alliance of 1905.

HAYDEN, FERDINAND VANDEVEER (1829-1887), American geologist, was born at Westfield, Massachusetts, on the 7th of September 1829. He graduated from Oberlin College in 1850 and from the Albany Medical College in 1853, where he attracted the notice of Professor James Hall, state geologist of New York, through whose influence he was induced to join in an exploration of Nebraska. In 1856 he was engaged under the United States government, and commenced a series of investigations of the Western Territories, one result of which was his *Geological Report of the Exploration of the Yellowstone and Missouri Rivers in 1859-1860* (1869). During the Civil War he was actively employed as an army surgeon. In 1867 he was appointed geologist-in-charge of the United States Geological and Geographical Survey of the Territories, and from his twelve years of labour there resulted a most valuable series of volumes in all branches of natural history and economic science; and he issued in 1877 his *Geological and Geographical Atlas of Colorado*. Upon the reorganization and establishment of the United States Geological Survey in 1879 he acted for seven years as one of the geologists. He died at Philadelphia on the 22nd of December 1887.

His other publications were: *Sun Pictures of Rocky Mountain Scenery* (1870); *The Yellowstone National Park*, illustrated by chromolithographic reproductions of water-colour sketches by Thomas Moran (1876); *The Great West: its Attractions and Resources* (1880). With F. B. Meek, he wrote (*Smithsonian Institution Contributions*, v. 14. Art. 4) "Palaeontology of the Upper Missouri, Pt. 1, Invertebrate." His valuable notes on Indian dialects are in *The Transactions of the American Philosophical Society* (1862), in *The American Journal of Science* (1862) and in *The Proceedings of the American Philosophical Society* (1869). With A. R. C. Selwyn he wrote *North America* (1883) for Stanford's *Compendium*.

HAYDN, FRANZ JOSEPH (1732-1809), Austrian composer, was born on the 31st of March 1732 at Rohrau (Trstnik), a village on the borders of Lower Austria and Hungary. There is sufficient evidence that his family was of Croatian stock: a fact which throws light upon the distinctively Slavonic character of much of his music. He received the first rudiments of education from his father, a wheelwright with twelve children, and at an early age evinced a decided musical talent. This attracted the attention of a distant relative named Johann Mathias Frankh, who was schoolmaster in the neighbouring town of Hainburg, and who, in 1738, took the child and for the next two years trained him as a chorister. In 1740, on the recommendation of the Dean of Hainburg, Haydn obtained a place in the cathedral choir of St Stephen's, Vienna, where he took the solo-part in the services and received, at the choir school, some further instruction on the violin and the harpsichord. In 1749 his voice broke, and the director, Georg von Reutter, took the occasion of a boyish escapade to turn him into the streets. A few friends lent him money and found him pupils, and in this way he was enabled to enter upon a rigorous course of study (he is said to have worked for sixteen hours a day), partly devoted to Fux's treatise on counterpoint, partly to the "Friedrich" and "Württemberg" sonatas of C. P. E. Bach, from which he gained his earliest acquaintance with the principles of musical structure. The first fruits of his work were a comic opera, *Der neue krumme Teufel*, and a Mass in F major (both written in 1751), the former of which was produced with success. About the same time he made the acquaintance of Metastasio, who was lodging in the same house, and who introduced him to one or two patrons; among others Señor Martinez, to whose daughter he gave lessons, and Porpora, who, in 1753, took him for the summer to Männersdorf, and there gave him instruction in singing and in the Italian language.

The turning-point of his career came in 1755, when he accepted an invitation to the country-house of Freiherr von Fürnberg, an accomplished amateur who was in the habit of collecting parties of musicians for the performance of chamber-works. Here Haydn wrote, in rapid succession, eighteen divertimenti which include his first symphony and his first quartet; the two earliest examples of the forms with which his name is most closely associated. Thenceforward his prospects improved. On his return to Vienna in 1756 he became famous as teacher and composer, in 1759 he was appointed conductor to the private band of Count Morzin, for whom he wrote several orchestral works (including a symphony in D major erroneously called his first), and in 1760 he was promoted to the sub-directorship of Prince Paul Esterhazy's *Kapelle*, at that time the best in Austria. During the tenure of his appointment with Count Morzin he married the daughter of a Viennese hairdresser named Keller, who had befriended him in his days of poverty, but the marriage turned out ill and he was shortly afterwards separated from his wife, though he continued to support her until her death in 1800. From 1760 to 1790 he remained with the Esterhazys, principally at their country-seats of Esterhàz and Eisenstadt, with occasional visits to Vienna in the winter. In 1762 Prince Paul Esterhazy died and was succeeded by his brother Nicholas, surnamed the Magnificent, who increased Haydn's salary, showed him every mark of favour, and, on the death of Werner in 1766, appointed him *Oberkapellmeister*. With the encouragement of a discriminating patron, a small but excellent orchestra and a free hand, Haydn made the most of his opportunity and produced a continuous stream of compositions in every known musical form. To this period belong five Masses, a dozen operas, over thirty clavier-sonatas, over forty quartets, over a hundred orchestral symphonies and overtures, a Stabat Mater, a set of interludes for the service of the Seven Words, an Oratorio *Tobias* written for the *Tonkünstler-Societät* of Vienna, and a vast number of concertos, divertimenti and smaller pieces, among which were no less than 175 for Prince Nicholas' favourite instrument, the baryton.

Meanwhile his reputation was spreading throughout Europe. A Viennese notice of his appointment as *Oberkapellmeister* spoke of him as "the darling of our nation," his works were reprinted or performed in every capital from Madrid to St Petersburg. He received commissions from the cathedral of Cadiz, from the grand duke Paul, from the king of Prussia, from the directors of the *Concert Spirituel* at Paris; beside his transactions with Breitkopf and Härtel, and with La Chevardière, he sold to one English firm the copyright of no less than 129 compositions. But the most important fact of biography during these thirty years was his friendship with Mozart, whose acquaintance he made at Vienna in the winter of 1781-1782. There can have been little personal intercourse between them, for Haydn was rarely in the capital, and Mozart seems never to have visited Eisenstadt; but the cordiality of their relations and the mutual influence which they exercised upon one another are of the highest moment in the history of 18th-century music. "It was from Haydn that I first learned to write a quartet," said Mozart; it was from Mozart that Haydn learned the richer style and the fuller mastery of orchestral effect by which his later symphonies are distinguished.

In 1790 Prince Nicholas Esterhazy died and the *Kapelle* was disbanded. Haydn, thus released from his official duties, forthwith accepted a commission from Salomon, the London concert-director, to write and conduct six symphonies for the concerts in the Hanover Square Rooms. He arrived in England at the beginning of 1791 and was welcomed with the greatest enthusiasm, receiving among other honours the degree of D Mus. from the university of Oxford. In June 1792 he returned home, and, breaking his journey at Bonn, was presented with a Cantata by Beethoven, then aged two-and-twenty, whom he invited to come to Vienna as his pupil. The lessons, which were not very successful, lasted for about a year, and were then interrupted by Haydn's second visit to England (January 1794 to July 1795), where he produced the last six of his "Salomon" symphonies. From 1795 onward he resided in the Mariahilf suburb of Vienna, and there wrote his last eight Masses, the last and finest of his chamber works, the Austrian national anthem (1797), the *Creation* (1799) and the *Seasons* (1801). His last choral composition which can be dated with any certainty was the Mass in C minor, written in 1802 for the name-day of Princess Esterhazy. Thenceforward his health declined, and his closing years, surrounded by the love of friends and the esteem of all musicians, were spent almost wholly in retirement. On the 27th of March 1808 he was able to attend a performance of the *Creation*, given in his honour, but it was his last effort, and on the 31st of May 1809 he died, aged seventy-seven. Among the mourners who followed him to the grave were many French officers from Napoleon's army, which was then occupying Vienna.

Haydn's place in musical history is best determined by his instrumental compositions. His operas, for all their daintiness and melody, no longer hold the stage; the Masses in which he "praised God with a cheerful heart" have been condemned by the severer decorum of our own day; of his oratorios the *Creation* alone survives. In all these his work belongs mainly to the style and idiom of a bygone generation: they are monuments, not landmarks, and their beauty and invention seem rather to close an epoch than to inaugurate its successor. Even the naïf pictorial suggestion, of which free use is made in the *Creation* and in the *Seasons*, is closer to the manner of Handel than to that of the 19th century: it is less the precursor of romance than the descendant of an earlier realism. But as the first great master of the quartet and the symphony his claim is incontestable. He began, half-consciously, by applying through the fuller medium the lessons of design which he had learned from C. P. E. Bach's sonatas; then the medium itself began to suggest wider horizons and new possibilities of treatment; his position at Eisenstadt enabled him to experiment without reserve; his genius, essentially symphonic in character, found its true outlet in the opportunities of pure musical structure. The quartets in particular exhibit a wider range and variety of structural invention than those of any other composer except Beethoven. Again it is here that we can most readily trace the important changes which he wrought in melodic idiom. Before his time instrumental music was chiefly written for the *Paradiesensaal*, and its melody often sacrificed vitality of idea to a ceremonial courtliness of phrase. Haydn broke through this convention by frankly introducing his native folk-music, and by writing many of his own tunes in the same direct, vigorous and simple style. The innovation was at first received with some disfavour; critics accustomed to polite formalism censured it as extravagant and undignified; but the freshness and beauty of its melody soon silenced all opposition, and did more than anything else throughout the 18th century to establish the principle of nationalism in musical art. The actual employment of Croatian folk-tunes may be illustrated from the string quartets Op. 17, No. 1; Op. 33, No. 3; Op. 50, No. 1; Op. 77, No. 1, and the Salomon Symphonies in D and E♭, while there is hardly an instrumental composition of Haydn's in which his own melodies do not show some traces of the same influence. His natural idiom in short was that of a heightened and ennobled folk-song, and one of the most remarkable evidences of his genius was the power with which he adapted all his perfection and symmetry of style to the requirements of popular speech. His music is in this way singularly expressive; its humour and pathos are not only absolutely sincere, but so outspoken that we cannot fail to catch their significance.

In the development of instrumental polyphony Haydn's work was almost as important as that of Mozart. Having

at his disposal a band of picked virtuosi he could produce effects as different from the tentative experiments of C. P. E. Bach as these were from the orchestral platitudes of Reutter or Hasse. His symphony *Le Midi* (written in 1761) already shows a remarkable freedom and independence in the handling of orchestral forces, and further stages of advance were reached in the oratorio of *Tobias*, in the Paris and Salomon symphonies, and above all in the *Creation*, which turns to good account some of the debt which he owed to his younger contemporary. The importance of this lies not only in a greater richness of musical colour, but in the effect which it produced on the actual substance and texture of composition. The polyphony of Beethoven was unquestionably influenced by it and, even in his latest sonatas and quartets, may be regarded as its logical outcome.

The compositions of Haydn include 104 symphonies, 16 overtures, 76 quartets, 68 trios, 54 sonatas, 31 concertos and a large number of divertimentos, cassations and other instrumental pieces; 24 operas and dramatic pieces, 16 Masses, a Stabat Mater, interludes for the "Seven Words," 3 oratorios, 2 Te Deums and many smaller pieces for the church, over 40 songs, over 50 canons and arrangements of Scottish and Welsh national melodies.

His younger brother, JOHANN MICHAEL HAYDN (1737-1806), was also a chorister at St Stephen's, and shortly after leaving the choir-school was appointed *Kapellmeister* at Grosswardein (1755) and at Salzburg (1762). The latter office he held for forty-three years, during which time he wrote over 360 compositions for the church and much instrumental music, which, though unequal, deserves more consideration than it has received. He was the intimate friend of Mozart, who had a high opinion of his genius, and the teacher of C. M. von Weber. His most important works were the *Missa hispanica*, which he exchanged for his diploma at Stockholm, a Mass in D minor, a Lauda Sion, a set of graduals, forty-two of which are reprinted in Diabelli's *Ecclesiasticon*, three symphonies (1785), and a string quintet in C major which has been erroneously attributed to Joseph Haydn. Another brother, JOHANN EVANGELIST HAYDN (1743-1805), gained some reputation as a tenor vocalist, and was for many years a member of Prince Esterhazy's *Kapelle*.

BIBLIOGRAPHY.—S. Mayr, *Brevi notizie storiche della vita e delle opere di Giuseppe Haydn* (1809); Griesinger, *Biographische Notizen über Joseph Haydn* (1810); Carpani, *Le Haydeni* (1812 and 1823); Bombet (M. de Stendhal), *Vies de Haydn, de Mozart et de Métastase* (Paris, 1854); Karajan, *Joseph Haydn in London* (1861); C. F. Pohl, *Mozart und Haydn in London* (1867); *Joseph Haydn* (vol. i. 1875, vol. ii. 1882: this, the standard biography, was left unfinished at Dr Pohl's death and needs a third volume to complete it); article on Haydn in Grove's *Dictionary of Music and Musicians*; Fr. S. Kuhač, *Josip Haydn i Hravatske Narodne Popievke* (Joseph Haydn and the Croatian Folk-songs) (Agram, 1880); A. Niggli, *Joseph Haydn, sein Leben und Werken* (Basel, 1882); L. Nohl, *Biographie Haydns* (Leipzig, Reclam); P. D. Townsend; *Joseph Haydn* (London, 1884), Biography in H. Reimann's *Berühmte Musiker* (Berlin, 1898); J. C. Hadden, *Joseph Haydn* (Great Musicians series) (London, 1902). To these should be added the list of Haydn's symphonies printed in Alfred Wotquenne's *Catalogue de la Bibliothèque du Conservatoire Royal de Bruxelles*, vol. ii. (1902).

(W. H. HA.)

HAYDON, BENJAMIN ROBERT (1786-1846), English historical painter and writer, was born at Plymouth on the 26th of January 1786. His mother was the daughter of the Rev. Benjamin Cobley, rector of Dodbrook, Devon, whose son, General Sir Thomas Cobley, signalized himself in the Russian service at the siege of Ismail. His father, a prosperous printer, stationer and publisher, was a man of literary taste, and was well known and esteemed amongst all classes in Plymouth. Haydon, an only son, at an early date gave evidence of his taste for study, which was carefully fostered and promoted by his mother. At the age of six he was placed in Plymouth grammar school, and at twelve in Plympton St Mary school. He completed his education in this institution, where Sir Joshua Reynolds also had acquired all the scholastic training he ever received. On the ceiling of the school-room was a sketch by Reynolds in burnt cork, which it used to be Haydon's delight to sit and contemplate. Whilst at school he had some thought of adopting the medical profession, but he was so shocked at the sight of an operation that he gave up the idea. A perusal of Albinus, however, inspired him with a love for anatomy; and Reynolds's discourses revived within him a smouldering taste for painting, which from childhood had been the absorbing idea of his mind.

Sanguine of success, full of energy and vigour, he started from the parental roof, on the 14th of May 1804, for London, and entered his name as a student of the Royal Academy. He began and prosecuted his studies with such unwearied ardour that Fuseli wondered when he ever found time to eat. At the age of twenty-one (1807) Haydon exhibited, for the first time, at the Royal Academy, "The Repose in Egypt," which was bought by Mr Thomas Hope the year after. This was a good start for the young artist, who shortly received a commission from Lord Mulgrave and an introduction to Sir George Beaumont. In 1809 he finished his well-known picture of "Dentatus," which, though it brought him a great increase of fame, involved him in a lifelong quarrel with the Royal Academy, whose committee had hung the picture in a small side-room instead of the great hall. In 1810 his difficulties began through the stoppage of an allowance of £200 a year he had received from his father. His disappointment was embittered by the controversies in which he now became involved with Sir George Beaumont, for whom he had painted his picture of "Macbeth," and Payne Knight, who had denied the beauties as well as the money value of the Elgin Marbles. "The Judgment of Solomon," his next production, gained him £700, besides £100 voted to him by the directors of the British Institution, and the freedom of the borough of Plymouth. To recruit his health and escape for a time from the cares of London life, Haydon joined his intimate friend Wilkie in a trip to Paris; he studied at the Louvre; and on his return to England produced his "Christ's Entry into Jerusalem," which afterwards formed the nucleus of the American Gallery of Painting, erected by his cousin, John Haviland of Philadelphia. Whilst painting another large work, the "Resurrection of Lazarus," his pecuniary difficulties increased, and for the first time he was arrested but not imprisoned, the sheriff-officer taking his word for his appearance. Amidst all these harassing cares he married in October 1821 a beautiful young widow who had some children, Mrs Hyman, to whom he was devotedly attached.

In 1823 Haydon was lodged in the King's Bench, where he received consoling letters from the first men of the day. Whilst a prisoner he drew up a petition to parliament in favour of the appointment of "a committee to inquire into the state of encouragement of historical painting," which was presented by Brougham. He also, during a second imprisonment in 1827, produced the picture of the "Mock Election," the idea of which had been suggested

by an incident that happened in the prison. The king (George IV.) gave him £500 for this work. Among Haydon's other pictures were—1829, "Eucles" and "Punch"; 1831, "Napoleon at St Helena," for Sir Robert Peel; "Xenophon, on his Retreat with the 'Ten Thousand,' first seeing the Sea"; and "Waiting for the *Times*," purchased by the marquis of Stafford; 1832, "Falstaff" and "Achilles playing the Lyre." In 1834 he completed the "Reform Banquet," for Lord Grey—this painting contained 197 portraits; in 1843, "Curtius Leaping into the Gulf," and "Uriel and Satan." There was also the "Meeting of the Anti-Slavery Society," energetically treated, now in the National Portrait Gallery. When the competition took place at Westminster Hall, Haydon sent two cartoons, "The Curse of Adam" and "Edward the Black Prince," but, with some unfairness, he was not allowed a prize for either. He then painted "The Banishment of Aristides," which was exhibited with other productions under the same roof where the American dwarf Tom Thumb was then making his début in London. The exhibition was unsuccessful; and the artist's difficulties increased to such an extent that, whilst employed on his last grand effort, "Alfred and the Trial by Jury," overcome by debt, disappointment and ingratitude, he wrote "Stretch me no longer on this rough world," and put an end to his existence with a pistol-shot, on the 22nd of June 1846, in the sixty-first year of his age. He left a widow and three children (various others had died), who, by the generosity of their father's friends, were rescued from their pecuniary difficulties and comfortably provided for; amongst the foremost of these friends were Sir Robert Peel, Count D'Orsay, Mr Justice Talfourd and Lord Carlisle.

Haydon began his first lecture on painting and design in 1835, and afterwards visited all the principal towns in England and Scotland. His delivery was energetic and imposing, his language powerful, flowing and apt, and replete with wit and humour; and to look at the lecturer, excited by his subject, one could scarcely fancy him a man overwhelmed with difficulties and anxieties. The height of Haydon's ambition was to behold the chief buildings of his country adorned with historical representations of her glory. He lived to see the acknowledgment of his principles by government in the establishment of schools of design, and the embellishment of the new houses of parliament; but in the competition of artists for the carrying out of this object, the commissioners (amongst whom was one of his former pupils) considered, or affected to consider, that he had failed. Haydon was well versed in all points of his profession; and his *Lectures*, which were published shortly after their delivery, showed that he was as bold a writer as painter. It may be mentioned in this connexion that he was the author of the long and elaborate article, "Painting," in the 7th edition of the *Encyclopaedia Britannica*.

To form a correct estimate of Haydon it is necessary to read his autobiography. This is one of the most natural books ever written, full of various and abundant power, and fascinating to the reader. The author seems to have daguerreotyped his feelings and sentiments without restraint as they rose in his mind, and his portrait stands in these volumes limned to the life by his own hand. His love for his art was both a passion and a principle. He found patrons difficult to manage; and, not having the tact to lead them gently, he tried to drive them fiercely. He failed, abused patrons and patronage, and intermingled talk of the noblest independence with acts not always dignified. He was self-willed to perversity, but his perseverance was such as is seldom associated with so much vehemence and passion. With a large fund of genuine self-reliance he combined a considerable measure of vanity. To the last he believed in his own powers and in the ultimate triumph of art. In taste he was deficient, at least as concerned himself. Hence the tone of self-assertion which he assumed in his advertisements, catalogues and other appeals to the public. He proclaimed himself the apostle and martyr of high art, and, not without some justice, he believed himself to have on that account a claim on the sympathy and support of the nation. It must be confessed that he often tested severely those whom he called his friends. Every reader of his autobiography will be struck at the frequency and fervour of the short prayers interspersed throughout the work. Haydon had an overwhelming sense of a personal, overruling and merciful providence, which influenced his relations with his family, and to some extent with the world. His conduct as a husband and father entitles him to the utmost sympathy. In art his powers and attainments were undoubtedly very great, although his actual performances mostly fall short of the faculty which was manifestly within him; his general range and force of mind were also most remarkable, and would have qualified him to shine in almost any path of intellectual exertion or of practical work. His eager and combative character was partly his enemy; but he had other enemies actuated by motives as unworthy as his own were always high-pitched and on abstract grounds laudable. Of his three great works—the "Solomon," the "Entry into Jerusalem" and the "Lazarus"—the second has generally been regarded as the finest. The "Solomon" is also a very admirable production, showing his executive power at its loftiest, and of itself enough to place Haydon at the head of British historical painting in his own time. The "Lazarus" (which belongs to the National Gallery, but is not now on view there) is a more unequal performance, and in various respects open to criticism and censure; yet the head of Lazarus is so majestic and impressive that, if its author had done nothing else, we must still pronounce him a potent pictorial genius.

The chief authorities for the life of Haydon are *Life of B. R. Haydon, from his Autobiography and Journals*, edited and compiled by Tom Taylor (3 vols., 1853); and *B. R. Haydon's Correspondence and Table Talk*, with a memoir by his son, F. W. Haydon (2 vols., 1876).

(W. M. R.)

HAYES, RUTHERFORD BIRCHARD (1822-1893), nineteenth president of the United States, was born in Delaware, Ohio, on the 4th of October 1822. He received his first education in the common schools, graduated in 1842 at Kenyon College, Gambier, Ohio, and was a student at the law school of Harvard University from 1843 until his graduation in 1845. He was admitted to the bar in 1845, and practised law, first at Lower Sandusky (now Fremont), and then at Cincinnati, where he won a very respectable standing, and in 1858-1861 served as city solicitor. In politics he was at first an anti-slavery Whig and then from the time of its organization in 1854 until his death was a member of the Republican party. In December 1852 he married Lucy Ware Webb of Chillicothe, Ohio, who survived him. After the breaking out of the Civil War the governor of Ohio, on the 7th of June 1861, appointed him a major of a volunteer regiment, and in July he was sent to western Virginia for active service. He served throughout the war, distinguished himself particularly at South Mountain, Winchester, Fisher's Hill and Cedar Creek, and by successive promotions became a brigadier-general of volunteers and, by brevet, a major-general of volunteers. While still in the field he was elected a member of the National House of Representatives, and took his seat in December 1865. He was re-elected in 1866, and supported the reconstruction measures advocated by his party. From 1868 to 1872 he was governor of Ohio. In 1873 he removed from Cincinnati to

Fremont, his intention being to withdraw from public life; but in 1875 the Republican party in Ohio once more selected him as its candidate for the governorship. He accepted the nomination with great reluctance. The Democrats adopted a platform declaring in favour of indefinitely enlarging the volume of the irredeemable paper currency which the Civil War had left behind it. Hayes stoutly advocated the speediest practicable resumption of specie payments, and carried the election. The "sound-money campaign" in Ohio having attracted the attention of the whole country, Hayes was marked out as a candidate for the presidency, and he obtained the nomination of the Republican National Convention of 1876, his chief competitor being James G. Blaine. The candidate of the Democratic party, Samuel J. Tilden, by his reputation as a statesman and a reformer of uncommon ability, drew many Republican votes. An excited controversy having arisen about the result of the balloting in the states of South Carolina, Florida, Oregon and Louisiana, the two parties in Congress in order to allay a crisis dangerous to public peace agreed to pass an act referring all contested election returns to an extraordinary commission, called the "Electoral Commission" (*q.v.*), which decided each contest by eight against seven votes in favour of the Republican candidates. Hayes was accordingly on the 2nd of March 1877 declared duly elected.

During his administration President Hayes devoted his efforts mainly to civil service reform, resumption of specie payments and the pacification of the Southern States, recently in rebellion. In order to win the co-operation of the white people in the South in maintaining peace and order, he put himself in communication with their leaders. He then withdrew the Federal troops which since the Civil War had been stationed at the southern State capitals. An end was thus made of the "carpet-bag governments" conducted by Republican politicians from the North, some of which were very corrupt, and had been upheld mainly by the Federal forces. This policy found much favour with the people generally, but displeased many of the Republican politicians, because it loosened the hold of the Republican party upon the Southern States. Though it did not secure to the negroes sufficient protection in the exercise of their political rights, it did much to extinguish the animosities still existing between the two sections of the Union and to promote the material prosperity of the South. President Hayes endeavoured in vain to induce Congress to appropriate money for a Civil Service Commission; and whenever he made an effort to restrict the operation of the traditional "spoils system," he met the strenuous opposition of a majority of the most powerful politicians of his party. Nevertheless the system of competitive examinations for appointments was introduced in some of the great executive departments in Washington, and in the custom-house and the post-office in New York. Moreover, he ordered that "no officer should be required or permitted to take part in the management of political organizations, caucuses, conventions or election campaigns," and that "no assessment for political purposes on officers or subordinates should be allowed"; and he removed from their offices the heads of the post-office in St Louis and of the custom-house in New York—influential party managers—on the ground that they had misused their official positions for partisan ends. In New York the three men removed were Chester A. Arthur, the collector; Alonzo B. Cornell, the naval officer of the Port; and George H. Sharpe, the surveyor of the customs. While these measures were of limited scope and effect, they served greatly to facilitate the more extensive reform of the civil service which subsequently took place, though at the same time they alienated a powerful faction of the Republican party in New York under the leadership of Roscoe Conkling. Although the resumption of specie payments had been provided for, to begin at a given time by the Resumption Act of January 1875, opposition to it did not cease. A bill went through both Houses of Congress providing that a silver dollar should be coined of the weight of 412½ grains, to be full legal tender for all debts and dues, public and private, except where otherwise expressly stipulated in the contract. President Hayes returned this bill with his veto, but the veto was overruled in both Houses of Congress. Meanwhile, however, the preparations for the return to specie payments were continued by the Administration with unflinching constancy and on the 1st of January 1879 specie payments were resumed without difficulty. None of the evils predicted appeared. A marked revival of business and a period of general prosperity ensued. In his annual message of the 1st of December 1879 President Hayes urged the suspension of the silver coinage and also the withdrawal of the United States legal tender notes, but Congress failed to act upon the recommendation. His administration also did much to ameliorate the condition of the Indian tribes and to arrest the spoliation of the public forest lands.

Although President Hayes was not popular with the professional politicians of his own party, and was exposed to bitter attacks on the part of the Democratic opposition on account of the cloud which hung over his election, his conduct of public affairs gave much satisfaction to the people generally. In the presidential election of 1880 the Republican party carried the day after an unusually quiet canvass, a result largely due to popular contentment with the then existing state of public affairs. On the 4th of March 1881 President Hayes retired to his home at Fremont, Ohio. Various universities and colleges conferred honorary degrees upon him. His remaining years he devoted to active participation in philanthropic enterprises; thus he served as president of the National Prison Association and of the Board of Trustees chosen to administer the John F. Slater fund for the promotion of industrial education among the negroes of the South, and was a member, also, of the Board of Trustees of the Peabody Education fund for the promotion of education in the South. He died at Fremont, after a short illness, on the 17th of January 1893.

There is no adequate biography, but three "campaign lives" may be mentioned: *Life, Public Services and Select Speeches of Rutherford B. Hayes*, by James Quay Howard (Cincinnati, 1876); *Life of R. B. Hayes*, by William D. Howells (New York, 1876); and a *Life* by Russell H. Conwell (Boston, 1876). See also Paul L. Haworth, *The Hayes-Tilden Disputed Presidential Election of 1876* (Cleveland, O., 1906).

(C. S.)

HAY FEVER, Hay Asthma, or Summer Catarrh, a catarrhal affection of the mucous membrane of the upper respiratory tract, due to the action of the pollen of certain grasses. It is often associated with asthmatic attacks. The disease affects certain families, and is hereditary in about one-third of the cases. It is more common among women than men, city than country dwellers, and the educated and highly nervous than the lower classes. It has no connexion with the coryzas that are produced in nervous people by the odour of cats, &c. The complaint has been investigated by Professor W. P. Dunbar of Hamburg, who has shown that it is due to the pollens of certain grasses (notably rye) and plants, and that the severity of the attack is directly proportional to the amount of pollen in the air. He has isolated an albuminoid poison which, when applied to the nose of a susceptible individual, causes an attack, while there is no result in the case of a normal person. By injecting the poison into

animals, he has obtained an anti-toxin, which is capable of aborting an attack of hay fever. The symptoms are those commonly experienced in the case of a severe cold, consisting of headache, violent sneezing and watery discharge from the nostrils and eyes, together with a hard dry cough, and occasionally severe asthmatic paroxysms. The period of liability to infection naturally coincides with the pollen season.

The radical treatment is to avoid vegetation. Local treatment consisting of thorough destruction of the sensitive area of the mucous membrane of the nose often produces good results. There are various drugs, the best of which are cocaine and the extract of the suprarenal body, which, when applied to the nose, are sometimes effectual; in practice, however, it is found that larger and larger doses are required, and that sooner or later they afford no relief. The same remarks apply to a number of patent specifics, of which the principal constituent is one of the above drugs. An additional and stronger objection to the use of cocaine is that a "habit" is often contracted, with the most disastrous results. Finally Dunbar's serum may be applied to the nose and eyes on rising, and on the slightest suggestion of irritation during the day; it will, in the large majority of cases, be found to be quite effectual.

HAYLEY, WILLIAM (1745-1820), English writer, the friend and biographer of William Cowper, was born at Chichester on the 9th of November 1745. He was sent to Eton in 1757, and to Trinity Hall, Cambridge, in 1763; his connexion with the Middle Temple, London, where he was admitted in 1766, was merely nominal. In 1767 he left Cambridge and went to live in London. Two years later he married Eliza, daughter of Thomas Ball, dean of Chichester. His private means enabled Hayley to live on his patrimonial estate at Eartham, Sussex, and he retired there in 1774. He had already written many occasional poetical pieces, when in 1771 his tragedy, *The Afflicted Father*, was rejected by David Garrick. In the same year his translation of Pierre Corneille's *Rodogune as The Syrian Queen* was also declined by George Colman. Hayley won the fame he enjoyed amongst his contemporaries by his poetical *Essays and Epistles*; a *Poetical Epistle to an Eminent Painter* (1780), addressed to his friend George Romney, an *Essay on History* (1780), in three epistles, addressed to Edward Gibbon; *Essay on Epic Poetry* (1782) addressed to William Mason; *A Philosophical Essay on Old Maids* (1785); and the *Triumphs of Temper* (1781). The last mentioned work was so popular as to run to twelve or fourteen editions; together with the *Triumphs of Music* (Chichester, 1804) it was ridiculed by Byron in *English Bards and Scotch Reviewers*. So great was Hayley's fame that on Thomas Warton's death in 1790 he was offered the laureateship, which he refused. In 1792, while writing the *Life of Milton* (1794), Hayley made Cowper's acquaintance. A warm friendship sprang up between the two which lasted till Cowper's death in 1800. Hayley indeed was mainly instrumental in getting Cowper his pension. In 1800 Hayley also lost his natural son, Thomas Alphonso Hayley, to whom he was devotedly attached. He had been a pupil of John Flaxman's, to whom Hayley's *Essay on Sculpture* (1800) is addressed. Flaxman introduced William Blake to Hayley, and after the latter had moved in 1800 to his "marine hermitage" at Felpham, Sussex, Blake settled near him for three years to engrave the illustrations for the *Life of Cowper*. This, Hayley's best known work, was published in 1803-1804 (Chichester) in 3 vols. In 1805 he published *Ballads founded on Anecdotes of Animals* (Chichester), with illustrations by Blake, and in 1809 *The Life of Romney*. For the last twelve years of his life Hayley received an allowance for writing his *Memoirs*. He died at Felpham on the 12th of November 1820. Hayley's first wife died in 1797; her mind had been seriously affected, and since 1789 they had been separated. He married in 1809 Mary Welford, but they also separated after three years. He left no children.

Hayley's *Poetical Works* were published in 3 vols. (1785); his *Poems and Plays* in 6 vols. (1788).

See *Memoirs ... of William Hayley ... and Memoirs of his son T. A. Hayley*, ed. John Johnson (2 vols., 1823) (containing many of Hayley's letters); an article on these memoirs by Robert Southey in the *Quarterly Review*, vol. xxxi., 1825; *William Blake*, by A. C. Swinburne (2nd ed., 1868, pp. 28 et seq.); *Life of William Blake*, by Alexander Gilchrist (vol. i., 1880), with some of Blake's letters to Hayley; *The Correspondence of William Cowper*, arranged by Thomas Wright (vol. iv., 1904), containing many letters to Hayley.

HAYM, RUDOLF (1821-1901), German publicist and philosopher, was born at Grünberg, in Silesia, on the 5th of October 1821, and died at St Anton (Arlberg) on the 27th of August 1901. He studied philosophy and theology at Halle and Berlin, and lived at Halle during 1846 and 1847. He was a member of the National Assembly at Frankfort in 1848, and wrote an account of the proceedings from the standpoint of the Right Centre. From 1851 he lectured in literature and philosophy at the university of Halle, and became professor in 1860. His writings are biographical and critical, devoted mainly to modern German philosophy and literature. In 1870 he published a masterly history of the Romantic school. He also wrote biographies of W. von Humboldt (1856), Hegel (1857), Schopenhauer (1864), Herder (1877-1885), Max Duncker (1890). In 1901 he published *Erinnerungen aus meinem Leben*.

HAYNAU, JULIUS JACOB (1786-1853), Austrian general, was the natural son of the landgrave—afterwards elector—of Hesse-Cassel, William IX. He entered the Austrian army as an infantry officer in 1801, and saw much service in the Napoleonic wars. He was wounded at Wagram, and distinguished during the operations in Italy in 1813 and 1814. Between 1815 and 1847 he rose to the rank of field marshal lieutenant. A violent temper, which he made no attempt to control or conceal, led him into trouble with his superiors. His hatred of revolutionary principles was fanatical. When the insurrectionary movements of 1848 broke out in Italy, his known zeal for the

cause of legitimacy, as much as his reputation as an officer, marked him out for command. He fought with success in Italy, but was chiefly noted for the severity he showed in suppressing and punishing a rising in Brescia. It ought to be remembered that the mob of Brescia had massacred invalid Austrian soldiers in the hospital, a provocation which always leads to reprisals. In June 1849 Haynau was called to Vienna to command first an army of reserve, and then in the field against the Hungarians. His successes against the declining revolutionary cause were numerous and rapid. In Hungary, as in Italy, he was accused of brutality. It was, for instance, asserted that he caused women who showed any sympathy with the insurgents to be whipped. His ostentatious hatred of the revolutionary parties marked him out as the natural object for these accusations. On the restoration of peace he was appointed to high command in Hungary. His temper quickly led him into quarrels with the minister of war, and he resigned his command in 1850. He then travelled abroad. The refugees had spread his evil reputation. In London he was attacked and beaten by Messrs Barclay & Perkins' draymen when visiting the brewery, and he was saved from mob violence in Brussels with some difficulty. He died on the 14th of March 1853. On the 11th of October 1808 Haynau had married Thérèse von Weber, the daughter of Field Marshal Lieutenant Weber, who was slain at Aspern. She died, leaving one daughter, in 1850.

See R. v. Schönhals, *Biographie des K. K. Feldzeugmeisters Julius Freiherrn von Haynau* (Vienna, 1875).

HAYNE, ROBERT YOUNG (1791-1839), American political leader, born in St Paul's parish, Colleton district, South Carolina, on the 10th of November 1791. He studied law in the office Of Langdon Cheves (1776-1857) in Charleston, S.C., and in November 1812 was admitted to the bar there, soon obtaining a large practice. For a short time during the War of 1812 against Great Britain, he was captain in the Third South Carolina Regiment. He was a member of the lower house of the state legislature from 1814 to 1818, serving as speaker in the latter year; was attorney-general of the state from 1818 to 1822, and in 1823 was elected, as a Democrat, to the United States Senate. Here he was conspicuous as an ardent free-trader and an uncompromising advocate of "States Rights," opposed the protectionist tariff bills of 1824 and 1828, and consistently upheld the doctrine that slavery was a domestic institution and should be dealt with only by the individual states. In one of his speeches opposing the sending by the United States of representatives to the Panama Congress, he said, "The moment the federal government shall make the unhallowed attempt to interfere with the domestic concerns of the states, those states will consider themselves driven from the Union." Hayne is best remembered, however, for his great debate with Daniel Webster (*q.v.*) in January 1830. The debate arose over the so-called "Foote's Resolution," introduced by Senator Samuel A. Foote (1780-1846) of Connecticut, calling for the restriction of the sale of public lands to those already in the market, but was concerned primarily with the relation to one another and the respective powers of the federal government and the individual states, Hayne contending that the constitution was essentially a compact between the states, and the national government and the states, and that any state might, at will, nullify any federal law which it considered to be in contravention of that compact. He vigorously opposed the tariff of 1832, was a member of the South Carolina Nullification Convention of November 1832, and reported the ordinance of nullification passed by that body on the 24th of November. Resigning from the Senate, he was governor of the state from December 1832 to December 1834, and as such took a strong stand against President Jackson, though he was more conservative than many of the nullificationists in the state. He was intendant (mayor) of Charleston, S.C., from 1835 to 1837, and was president of the Louisville, Cincinnati & Charleston railway from 1837 to 1839. He died at Asheville, N.C., on the 24th of September 1839. His son, Paul Hamilton Hayne (1830-1886), was a poet of some distinction, and in 1878 published a life of his father.

See Theodore D. Jervey, *Robert Y. Hayne and his Times* (New York, 1909).

HAYTER, SIR GEORGE (1792-1871), English painter, was the son of a popular drawing-master and teacher of perspective who published a well-known introduction to perspective and other works. He was born in London, and in his early youth went to sea. He afterwards studied in the Royal Academy, became a miniature-painter, and was appointed in 1816 miniature-painter to the princess Charlotte. He passed some years in Italy, more especially in Rome, between 1816 and 1831, returned to London in the last-named year, resumed portrait-painting, now chiefly in oil-colour, executed many likenesses of the royal family, and attained such a reputation for finish and refinement in his work that he received the appointment of principal painter to Queen Victoria and teacher of drawing to the princesses. In 1842 he was knighted. He painted various works on a large scale of a public and semi-historical character, but essentially works of portraiture; such as "The Trial of Queen Caroline" (189 likenesses), "The Meeting of the First Reformed Parliament," now in the National Portrait Gallery, "Queen Victoria taking the Coronation Oath" (accounted his finest production), "The Marriage of the Queen," and the "Trial of Lord William Russell." The artistic merits of Hayter's works are not, however, such as to preserve to him with posterity an amount of *prestige* corresponding to that which court patronage procured him.

He is not to be confounded with a contemporary artist, John Hayter, who produced illustrations for the *Book of Beauty*, &c.

HAYTON (Haithon, Hethum), king of Little Armenia or Cilicia from 1224 to 1269, traveller in western and central Asia, Mongolia, &c., was the son of Constantine Rupen, and became heir to the throne of Lesser Armenia by his marriage with Isabella, daughter and only child of Leo II. After a reign of forty-five years he abdicated

(1269) in favour of his son Leo III., became a monk and died in 1271. Before his accession he had been "constable," or head of the Armenian army, and "bailiff" of the realm. Throughout his reign he followed the policy of friendship and alliance with the overwhelming power of the Mongols. In about 1248 he sent his brother Sempad, who was now constable in his place, on a mission to Kuyuk Khan, the supreme Mongol emperor. Sempad was well received and returned home in 1250, bringing letters from Kuyuk. After Mangu's accession in 1251, Batu (the most powerful of the Mongol princes and generals, and the conqueror—in name at least—of eastern Europe, now commanding on the line of the Volga) summoned Hayton to the court of the new grand khan. Carefully disguised, so as to pass safely through the Turkish states in the interior of eastern Asia Minor (where he was hated as an ally of the Mongols against Islam), Hayton made his way to Kars, the central Mongol camp in Great Armenia, where the famous general Bachu, or Baiju, commanded. Here he reported himself, and was permitted to remain some time in the Ararat region, at the foot of Mt Alagoz, near the metropolitan church of Echmiadzin. Being joined by his suite, especially the clerical diplomatists Basil the Priest, and James the Abbot, Hayton next passed through eastern Caucasia, threading the pass of the Iron Gates of Derbent, and so reached the camp of Batu on the Volga, where he was cordially welcomed. Thence he set out (May 13th, 1254) on the "very long road beyond the Caspian Sea" to the residence of Mangu at or near Karakorum, south of Lake Baikal. After passing the Ural river, we only hear of his arrival at Or, probably the present Ili province, east of Balkhash, and of his reaching the Irtish, entering the Naiman country, and passing through "Karakhitai" (apparently the capital of the ruined Karakhitai empire is intended, a place perhaps situated on the Chu, mentioned out of its proper place in Hayton's record). On the 13th of September the travellers entered Mongolia, and on the 14th (?) of September were received by Mangu. Here the king remained till the 1st of November, when he left with diplomas, seals and letters of enfranchisement which promised great things for the Armenian state, church and people. His return journey was by very unusual and interesting routes—through the Urumtsi region, the basin of "the sea of milk," Lake Sairam, the valley of the Ili, the neighbourhood of Kulja, and so over mountains, which probably answer to certain outliers of the Alexander range, to Talas near the present Aulie Ata, midway between the Syr Daria and the Chu. Here he met and conferred with Hulagu Khan, Mangu's brother, the future conqueror of Bagdad: probably Hayton was expected to aid in the coming forward movement of the Mongol armies against the Moslem world. From Talas Hayton made a detour to the north-west to meet another Mongol prince, Sartach the son of Batu; after which he ascended the valley of the Syr Daria, crossed into Trans-Oxiana, visited Samarkand and Bokhara, and passed the Oxus apparently near Charjui. By way of Merv and Sarakhs he then entered Khorasan and traversed north Persia, passing through Rai near Tehran, Kazvin and Tabriz, and so returning to the camp of Bachu in Armenia, now at Sisian near Lake Gokcha (July 1255). Thanks to his powerful friends, Hayton's journey was unusually rapid. Eight months after quitting Mangu's horde, he was back in Great Armenia. The narrative of this journey, which was written by a member of the king's suite, one Kirakos of Gandsak (the modern Elizavetpol), concludes with some interesting references to Buddhist tenets, to Chinese habits, to various monstrous races and to certain "women endowed with reason" dwelling "beyond Cathay." It also gives some notes, compounded of truth and legend, on the wild tribes and animals of the Gobi and adjoining regions.

The record drawn up by Kirakos Gandsaketsi was in Armenian. A MS. of his, dated 1616, was found in the Sanahin monastery in Georgia, and translated into Russian by Prince Argutinsky in the *Sibirsky Vyestnik* for 1822, pp. 69, &c. This Russian version was again translated into French by Klaproth in the *Nouveau Journal asiatique* for 1833 (vol. xii. pp. 273, &c.). Another French translation was made direct from the Armenian by M. Brosset in the *Mémoires de l'Académie des Sciences de St Pétersbourg* for 1870; a fresh Russian version of the original, by Professor Patkanov, appeared in 1874. See also E. Bretschneider, *Medieval Researches from Eastern Asiatic Sources*, i. 164-172 (London, 1888, "Trübner's Oriental" Series); C. R. Beazley, *Dawn of Modern Geography*, ii. 381-391 (1901).

(C. R. B.)

HAYWARD, ABRAHAM (1801-1884), English man of letters, son of Joseph Hayward, of an old Wiltshire family, was born at Wilton, near Salisbury, on the 22nd of November 1801. After education at Blundell's school, Tiverton, he entered the Inner Temple in 1824, and was called to the bar in June 1832. He took part as a conservative in the discussions of the London Debating Society, where his opponents were J. A. Roebuck and John Stuart Mill. The editorship of the *Law Magazine; or, Quarterly Review of Jurisprudence*, which he held from 1829 to 1844, brought him into connexion with John Austin, G. Cornewall Lewis, and such foreign jurists as Savigny, whose tractate on contemporary legislation and jurisprudence he rendered into English. In 1833 he travelled abroad, and on his return printed privately a translation of Goethe's *Faust* into English prose (pronounced by Carlyle to be the best version extant in his time). A second and revised edition was published after another visit to Germany in January 1834, in the course of which Hayward met Tieck, Chamisso, De La Motte Fouqué, Varnhagen von Ense and Madame Goethe. In 1878 he contributed the rather colourless volume on Goethe to Blackwood's *Foreign Classics*. A successful translation was in those days a first-rate credential for a reviewer, and Hayward began contributing to the *New Monthly*, the *Foreign Quarterly*, the *Quarterly Review* and the *Edinburgh Review*. His first successes in this new field were won in 1835-1836 by articles on Walker's "Original" and on "Gastronomy." The essays were reprinted to form one of his best volumes, *The Art of Dining*, in 1852. In February 1835 he was elected to the Athenaeum Club under Rule II., and he remained for nearly fifty years one of its most conspicuous and most influential members. He was also a subscriber to the Carlton, but ceased to frequent it when he became a Peelite. At the Temple, Hayward, whose reputation was rapidly growing as a connoisseur not only of a bill of fare but also (as Swift would have said) of a bill of company, gave *recherché* dinners, at which ladies of rank and fashion appreciated the wit of Sydney Smith and Theodore Hook, the dignity of Lockhart and Lyndhurst and the oratory of Macaulay. At the Athenaeum and in political society he to some extent succeeded to the position of Croker. He and Macaulay were commonly said to be the two best-read men in town. Hayward got up every important subject of discussion immediately it came into prominence, and concentrated his information in such a way that he habitually had the last word to say on a topic. When Rogers died, when *Vanity Fair* was published, when the *Greville Memoirs* was issued or a revolution occurred on the continent, Hayward, whose memory was as retentive as his power of accumulating documentary evidence was exhaustive, wrote an elaborate essay on the subject for the *Quarterly* or the *Edinburgh*. He followed up his paper by giving his acquaintances no rest until

they either assimilated or undertook to combat his views. Political ladies first, and statesmen afterwards, came to recognize the advantage of obtaining Hayward's good opinion. In this way the "old reviewing hand" became an acknowledged link between society, letters and politics. As a professional man he was less successful; his promotion to be Q.C. in 1845 excited a storm of opposition, and, disgusted at not being elected a Bencher of his Inn in the usual course, Hayward virtually withdrew from legal practice. In February 1848 he became one of the chief leader-writers for the Peelite organ, the *Morning Chronicle*. The morbid activity of his memory, however, continued to make him many enemies. He alienated Disraeli by tracing a purple patch in his official eulogy of Wellington to a newspaper translation from Thiers's funeral panegyric on General St Cyr. His sharp tongue made an enemy of Roebuck, and he disgusted the friends of Mill by the stories he raked up for an obituary notice of the great economist (*The Times*, 10th May 1873). He broke with Henry Reeve in 1874 by a venomous review of the *Greville Memoirs*, in which Reeve was compared to the beggarly Scot deputed to let off the blunderbuss which Bolingbroke (Greville) had charged. His enemies prevented him from enjoying a well-selected *quasi*-sinecure, which both Palmerston and Aberdeen admitted to be his due. Samuel Warren attacked him (very unjustly, for Hayward was anything but a parasite) as Venom Tuft in *Ten Thousand a Year*; and Disraeli aimed at him partially in Ste Barbe (in *Endymion*), though the satire here was directed primarily against Thackeray. After his break with Reeve, Hayward devoted himself more exclusively to the *Quarterly*. His essays on Chesterfield and Selwyn were reprinted in 1854. Collective editions of his articles appeared in volume form in 1858, 1873 and 1874, and *Selected Essays* in two volumes, 1878. In his useful but far from flawless edition of the *Autobiography, Letters and Literary Remains of Mrs* (*Thrale*) *Piozzi* (1861), he again appears as a supplementer and continuator of J. W. Croker. His *Eminent Statesmen and Writers* (1880) commemorates to a large extent personal friendships with such men as Dumas, Cavour and Thiers, whom he knew intimately. As a counsellor of great ladies and of politicians, to whom he held forth with a sense of all-round responsibility surpassing that of a cabinet minister, Hayward retained his influence to the last years of his life. But he had little sympathy with modern ideas. He used to say that he had outlived every one that he could really look up to. He died, a bachelor, in his rooms at 8 St James's Street (a small museum of autograph portraits and reviewing trophies) on the 2nd of February 1884.

Two volumes of Hayward's *Correspondence* (edited by H. E. Carlisle) were published in 1886. In *Vanity Fair* (27th November 1875) he may be seen as he appeared in later life.

(T. Se.)

HAYWARD, SIR JOHN (*c.* 1560-1627), English historian, was born at or near Felixstowe, Suffolk, where he was educated, and afterwards proceeded to Pembroke College, Cambridge, where he took the degrees of B.A., M.A. and LL.D. In 1599 he published *The First Part of the Life and Raigne of King Henrie IV.* dedicated to Robert Devereux, earl of Essex. This was reprinted in 1642. Queen Elizabeth and her advisers disliked the tone of the book and its dedication, and the queen ordered Francis Bacon to search it for "places in it that might be drawn within case of treason." Bacon reported "for treason surely I find none, but for felony very many," explaining that many of the sentences were stolen from Tacitus; but nevertheless Hayward was put in prison, where he remained until about 1601. On the accession of James I. in 1603 he courted the new king's favour by publishing two pamphlets—"An Answer to the first part of a certaine conference concerning succession," and "A Treatise of Union of England and Scotland." The former pamphlet, an argument in favour of the divine right of kings, was reprinted in 1683 as "The Right of Succession" by the friends of the duke of York during the struggle over the Exclusion Bill. In 1610 Hayward was appointed one of the historiographers of the college which James founded at Chelsea; in 1613 he published his *Lives of the Three Norman Kings of England*, written at the request of James's son, Prince Henry; in 1616 he became a member of the College of Advocates; and in 1619 he was knighted. He died in London on the 27th of June 1627. Among his manuscripts was found *The Life and Raigne of King Edward VI.*, first published in 1630, and *Certain Yeres of Queen Elizabeth's Raigne*, the beginning of which was printed in an edition of his *Edward VI.*, published in 1636, but which was first published in a complete form in 1840 for the Camden Society under the editorship of John Bruce, who prefixed an introduction on the life and writings of the author. Hayward was conscientious and diligent in obtaining information, and although his reasoning on questions of morality is often childish, his descriptions are generally graphic and vigorous. Notwithstanding his imprisonment under Elizabeth, his portrait of the qualities of the queen's mind and person is flattering rather than detractive. He also wrote several works of a devotional character.

HAYWOOD, ELIZA (*c.* 1693-1756), English writer, daughter of a London tradesman named Fowler, was born about 1693. She made an early and unhappy marriage with a man named Haywood, and her literary enemies circulated scandalous stories about her, possibly founded on her works rather than her real history. She appeared on the stage as early as 1715, and in 1721 she revised for Lincoln's Inn Fields *The Fair Captive*, by a Captain Hurst. Two other pieces followed, but Eliza Haywood made her mark as a follower of Mrs Manley in writing scandalous and voluminous novels. To *Memoirs of a certain Island adjacent to Utopia, written by a celebrated author of that country. Now translated into English* (1725), she appended a key in which the characters were explained by initials denoting living persons. The names are supplied to these initials in the copy in the British Museum. *The Secret History of the Present Intrigues of the Court of Caramania* (1727) was explained in a similar manner. The style of these productions is as extravagant as their matter. Pope attacked her in a coarse passage in *The Dunciad* (bk. ii. 11. 157 et seq.), which is aggravated by a note alluding to the "profligate licentiousness of those shameless scribblers (for the most part of that sex which ought least to be capable of such malice or impudence) who in libellous Memoirs and Novels reveal the faults or misfortunes of both sexes, to the ruin of public fame, or disturbance of private happiness." Swift, writing to Lady Suffolk, says, "Mrs Haywood I have heard of as a stupid, infamous, scribbling woman, but have not seen any of her productions." She continued to be a prolific writer of novels until her death on the 25th of February 1756, but her later works are characterized by extreme propriety, though an anonymous story of *The Fortunate Foundlings* (1744), purporting to be an account

of the children of Lord Charles Manners, is generally ascribed to her.

A collected edition of her novels, plays and poems appeared in 1724, and her *Secret Histories, Novels and Poems* in 1725. See also an article by S. L. Lee in the *Dictionary of National Biography*.

HAZARA, a race of Afghanistan. The Hazaras are of Mongolian origin, speak a dialect of Persian, and belong to the Shiah sect of Mahommedans. They are of middle size but stoutly made, with small grey eyes, high cheek bones and smooth faces. They are descendants of military colonists introduced by Jenghiz Khan, who occupy all the highlands of the upper Helmund valley, spreading through the country between Kabul and Herat, as well as into a strip of territory on the frontier slopes of the Hindu Kush north of Kabul. In the western provinces they are known as the Chahar Aimak (Hazaras, Jamshidis, Taimanis and Ferozkhois), and in other districts they are distinguished by the name of the territory they occupy. They are pure Mongols, intermixing with no other races (chiefly for the reason that no other races will intermix with them), preserving their language and their Mongol characteristics uninfluenced by their surroundings, having absolutely displaced the former occupants of the Hazarajat and Ghor. They make good soldiers and excellent pioneers. The amir's companies of engineers are recruited from the Hazaras, and they form perhaps the most effective corps in his heterogeneous army. They are now recruited into the British service in India.

HAZARA, a district of British India, in the Peshawar division of the North-West Frontier Province, with an area of 3391 sq. m. It is bounded on the N. by the Black Mountain, the Swat country, Kohistan and Chilas; on the E. by the native state of Kashmir; on the S. by Rawalpindi district; and on the W. by the river Indus. On the creation of the North-West Frontier Province in 1901 the district was reconstituted, the Tahsil of Attock being transferred to Rawalpindi. The district forms a wedge of territory extending far into the heart of the outer Himalayas, and consisting of a long narrow valley, shut in on both sides by lofty mountains, whose peaks rise to a height of 17,000 ft. above sea level. Towards the centre of the district the vale of Kagan is bounded by mountain chains, which sweep southward still maintaining a general parallel direction, and send off spurs on every side which divide the country into numerous minor dales. The district is well watered by the tributaries of the Indus, the Kunhar, which flows through the Kagan Valley into the Jhelum, and many rivulets. Throughout the scenery is picturesque. To the north rise the distant peaks of the snow-clad ranges; midway, the central mountains stand clothed to their rounded summits with pines and other forest trees, while grass and brushwood spread a green cloak over the nearer hills, and cultivation covers every available slope. The chief frontier tribes on the border are the cis-Indus Swatis, Hassanzais, Akazais, Chagarzais, Pariari Syads, Madda Khels, Amazais and Umarzais. Within the district Pathans are not numerous.

The name Hazara possibly belonged originally to a Turki family which entered India with Timur in the 14th century, and subsequently settled in this remote region. During the prosperous period of the Mogul dynasty the population included a number of mixed tribes, which each began to assert its independence, so that the utmost anarchy prevailed until Hazara attracted the attention of the rising Sikh monarchy. Ranjit Singh first obtained a footing here in 1818, and, after eight years of constant aggression, became master of the whole country. During the minority of the young maharaja Dhuleep Singh, the Sikh kingdom fell into a state of complete disorganization; the people seized the opportunity for recovering their independence, and rose in 1845 in rebellion. They stormed the Sikh forts, laid siege to Haripur, and drove the governor across the borders. After the first Sikh War it was proposed to transfer Hazara with Kashmir to Gulab Singh, but it remained under the Lahore government in charge of James Abbott, who pacified it in less than a year and held it single-handed throughout the troubles of the second Sikh War. It was also undisturbed during the Mutiny. The population in 1901 was 560,288, showing an increase of 8.52% in the decade. The headquarters are at Abbotabad; pop. (1901) 7764. Through the Kagan valley and over the Babusar pass at its head lies the most direct route from the Punjab to Chilas and Gilgit.

HAZARD (O. Fr. *hazard*, from Span. *azar*, unlucky throw at dice, misfortune, from Arab, *al*, and *zar*, dice), a game of dice (called Craps in America), once very popular in England and played for large stakes at the famous rooms of Crockford (St James's Street, London) and Almack (Pall Mall, London). The player or "caster" calls a "main" (that is, any number from five to nine inclusive). He then throws with two dice. If he "throws in," or "nicks," he wins the sum played for from the banker or "setter." Five is a nick to five, six and twelve are nicks to six, seven and eleven to seven, eight and twelve to eight and nine to nine. If the caster "throws out" by throwing aces, or deuce-ace (called crabs or craps), he loses. When the main is five or nine the caster throws out with 11 or 12; when the main is six or eight he throws out with 11; when the main is seven he throws out with 12. If the caster neither nicks nor throws out, the number thrown is his "chance," and he keeps on throwing till either the chance comes up, when he wins, or till the main comes up, when he loses. When a chance is thrown the "odds" for or against the chance are laid by the setter to the amount of the original stake. Seven is the best main for the caster to call, as it can be thrown in six different ways out of the thirty-six casts which are possible with dice. Supposing seven to be the main; then the caster wins if he throws 7 or 11; he loses if he throws crabs or 12. If he throws any other number, 4 for example, that is his chance. The odds against him are two to one, as 7 can be thrown in six ways, but 4 only in three; hence six to three, or two to one, are the correct odds, and if the original stake was £1, the setter now lays £2 to £1 in addition. It is useful to remember that 2 and 12 can be thrown in one way; 3 and 11 in two ways; 4 and 10 in three ways; 5 and 9 in four ways; 6 and 8 in five ways. The odds against

the caster are thus given by Hoyle: If 7 is the main and 4 the chance, two to one; 6 and 4, five to three; 5 and 4, four to three; 7 and 9, three to two; 7 and 6, six and five; 7 and 5, three to two; 6 and 5, five to four; 8 and 5, five to four, &c.

HAZARIBAGH, a town and district of British India, in the Chota Nagpur division of Bengal. The town is well situated at an elevation of 2000 ft. Pop. (1901) 15,799. Hazaribagh has ceased to be a military cantonment since the European penitentiary was abolished. There are a central jail and a reformatory school. The Dublin University Mission maintains a First Arts college.

The District comprises an area of 7021 sq. m. In 1901 the population was 1,177,961, showing an increase of 1% in the decade. The physical formation of Hazaribagh exhibits three distinct features: (1) a high central plateau occupying the western section, the surface of which is undulating and cultivated; (2) a lower and more extensive plateau stretching along the north and eastern portions; to the north, the land is well cultivated, while to the east the country is of a more varied character, the elevation is lower, and the character of a plateau is gradually lost; (3) the central valley of the Damodar river occupying the entire southern section. Indeed, although the characteristics of the district are rock, hill and wide-spreading jungle, fine patches of cultivation are met with in all parts, and the scenery is generally pleasing and often striking. The district forms a part of the chain of high land which extends across the continent of India, south of the Nerbudda on the west, and south of the Sone river on the east. The most important river is the Damodar, with its many tributaries, which drains an area of 2480 sq. m.

The history of the district is involved in obscurity until 1755, about which time a certain Mukund Singh was chief of the country. In a few years he was superseded by Tej Singh, who had gained the assistance of the British. In 1780 Hazaribagh, along with the surrounding territory, passed under direct British rule.

The district contains an important coal-field at Giridih which supplies the East Indian railway. There are altogether six mines. There are also mica mines which are gaining in importance. Rice and oilseeds are the principal crops. Tea cultivation has been tried but does not flourish, and is almost extinct. The only railways are the branch of the East Indian to the coal-field at Giridih, where there is a technical school maintained by the railway company, and the newly-opened Gaya-Katrasgarh chord line; but the district is traversed by the Grand Trunk road. Parasnath hill is annually visited by large numbers of Jain worshippers.

HAZEBROUCK, a town of northern France, capital of an arrondissement in the department of Nord, on the canalized Bourre, 29 m. W.N.W. of Lille, on the Northern railway, between that town and St Omer. Pop. (1906), town, 8798; commune, 12,819. With the exception of the church of St Eloi, a building of the 16th century with a spire of fine open work 260 ft. high, and the hospice, occupying a convent built in the 16th and 17th centuries, there is little of architectural interest in the town. Hazebrouck is the seat of a sub prefect, and has a tribunal of first instance and a board of trade arbitration. It is the market for a fertile agricultural district, and has trade in live-stock, grain and hops. Cloth-weaving is the chief industry. Hazebrouck is an important junction, and railway employés form a large part of its population.

HAZEL (O. Eng. *hæsel*[1]; cf. Ger. *Hasel*, Swed. and Dan. *hassel*, &c.,; Fr. *noisetier, coudrier*), botanically *corylus*, a genus of shrubs or low trees of the natural order Corylaceae. The common hazel, *Corylus Avellana* (fig. 1), occurs throughout Europe, in North Africa and in central and Russian Asia, except the northernmost parts. It is commonly found in hedges and coppices, and as an undergrowth in woods, and reaches a height of some 12 ft.; occasionally, as at Eastwell Park, Kent, it may attain to 30 ft. According to Evelyn (*Sylva*, p. 35, 1664), hazels "above all affect cold, barren, dry, and sandy soils; also mountains, and even rockie ground produce them; but more plentifully if somewhat moist, dankish, and mossie." In Kent they flourish best in a calcareous soil. The bark of the older stems is of a bright brown, mottled with grey, that of the young twigs is ash-coloured, and glandular and hairy. The leaves are alternate, from 2 to 4 in. in length, downy below, roundish heart-shaped, pointed and shortly stalked. In the variety *C. purpurea*, the leaves, as also the pellicle of the kernel and the husk of the nut, are purple, and in *C. heterophylla* they are thickly clothed with hairs. In autumn the rich yellow tint acquired by the leaves of the hazel adds greatly to the beauty of landscapes. The flowers are monoecious, and appear in Great Britain in February and March, before the leaves. The cylindrical drooping yellow male catkins (fig. 2) are 1 to 2½ in. long, and occur 2 to 4 in a raceme; when in unusual numbers they may be terminal in position. The female flowers are small, sub-globose and sessile, resembling leaf-buds, and have protruding crimson stigmas; the minute inner bracts, by their enlargement, form the palmately lobed and cut involucre or husk of the nut. The ovary is not visible till nearly midsummer, and is not fully developed before autumn. The nuts have a length of from ½ to ¾ in., and grow in clusters. Double nuts are the result of the equal development of the two carpels of the original flower, of which ordinarily one becomes abortive; fusion of two or

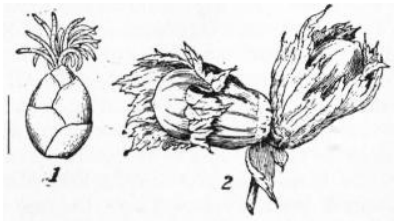


Fig. 1.—Hazel (*Corylus Avellana*).—1, Female catkin (enlarged); 2, Pair of fruits (nuts) each enclosed in its involucre (reduced).

more nuts is not uncommon. From the light-brown or brown colour of the nuts the terms *hazel* and *hazelly*, *i.e.* "in hue as hazel nuts" (Shakespeare, *Taming of the Shrew*, ii. 1), derive their significance.[2] The wood of the hazel is whitish-red, close in texture and pliant, and has when dry a weight of 49 lb per cub. ft.; it has been used in cabinet-making, and for toys and turned articles. Curiously veined veneers are obtained from the roots; and the root-shoots are largely employed in the making of crates, coal-corves or baskets, hurdles, withs and bands, whip-handles and other objects. The rods are reputed to be most durable when from the driest ground, and to be especially good where the bottom is chalky. The light charcoal afforded by the hazel serves well for crayons, and is valued by gunpowder manufacturers. An objection to the construction of hedges of hazel is the injury not infrequently done to them by the nut-gatherer, who "with active vigour crushes down the tree" (Thomson's *Seasons*, "Autumn"), and otherwise damages it.

The filbert,[3] among the numerous varieties of *Corylus Avellana*, is extensively cultivated, especially in Kent, for the sake of its nuts, which are readily distinguished from cob-nuts by their ample involucre and greater length. It may be propagated by suckers and layers, by grafting and by sowing. Suckers afford the strongest and earliest-bearing plants. Grafted filberts are less liable than others to be encumbered by suckers at the root. By the Maidstone growers the best plants are considered to be obtained from layers. These become well rooted in about a twelvemonth, and then, after pruning, are bedded out in the nursery for two or three years. The filbert is economically grown on the borders of plantations or orchards, or in open spots in woods. It thrives most in a light loam with a dry subsoil; rich and, in particular, wet soils are unsuitable, conducing to the formation of too much wood. Plantations of filberts are made in autumn, in well-drained ground, and a space of about 10 ft. by 8 has to be allowed for each tree. In the third year after planting the trees may require root-pruning; in the fifth or sixth they should bear well. The nuts grow in greatest abundance on the extremities of second year's branches, where light and air have ready access. To obtain a good tree, the practice in Kent is to select a stout upright shoot 3 ft. in length; this is cut down to about 18 in. of which the lower 12 are kept free from outgrowth. The head is pruned to form six or eight strong offsets; and by judicious use of the knife, and by training, preferably on a hoop placed within them, these are caused to grow outwards and upwards to a height of about 6 ft. so as to form a bowl-like shape. Excessive luxuriance of the laterals may be combated by root-pruning, or by checking them early in the season, and again later, and by cutting back to a female blossom bud, or else spurring nearly down to the main branch in the following spring.

FIG. 2.—Catkin of Hazel (*Corylus Avellana*), consisting of an axis covered with bracts in the form of scales, each of which covers a male flower, the stamens of which are seen projecting beyond the scale. The catkin falls off entire, separating from the branch by an articulation.

Filbert nuts required for keeping must be gathered only when quite ripe; they may then be preserved in dry sand, or, after drying, by packing with a sprinkling of salt in sound casks or new flower-pots. Their different forms include the Cosford, which are thin-shelled and oblong; the Downton, or large square nut, having a lancinated husk; the white or Wrotham Park filbert; and the red hazel or filbert, the kernel of which has a red pellicle. The last two, on account of their elongated husk, have been distinguished as a species, under the name *Corylus tubulosa*. Like these, apparently, were the nuts of Abella, or Avella, in the Campania (cf. Fr. *aveline*, filbert), said by Pliny to have been originally designated "Pontic," from their introduction into Asia and Greece from Pontus (see *Nat. Hist.* xv. 24, xxiii. 78). Hazel-nuts, under the name of Barcelona or Spanish nuts, are largely exported from France and Portugal, and especially Tarragona and other places in Spain. They afford 60% of a colourless or pale-yellow, sweet-tasting, non-drying oil, which has a specific gravity of 0.92 nearly, becomes solid at -19° C. (Cloez), and consists approximately of carbon 77, and hydrogen and oxygen each 11.5%. Hazel nuts formed part of the food of the ancient lake-dwellers of Switzerland and other countries of Europe (see Keller, *Lake Dwellings*, trans. Lee, 2nd ed., 1878). By the Romans they were sometimes eaten roasted. Kaltenbach (*Pflanzenfeinde*, pp. 633-638, 1874) enumerates ninety-eight insects which attack the hazel. Among these the beetle *Balaninus nucum*, the nut-weevil, seen on hazel and oak stems from the end of May till July, is highly destructive to the nuts. The female lays an egg in the unripe nut, on the kernel of which the larva subsists till September, when it bores its way through the shell, and enters the earth, to undergo transformation into a chrysalis in the ensuing spring. The leaves of the hazel are frequently found mined on the upper and under side respectively by the larvae of the moths *Lithocolletis coryli* and *L. Nicelii*. Squirrels and dormice are very destructive to the nut crop, as they not only take for present consumption but for a store for future supply. Parasitic on the roots of the hazel is found the curious leafless *Lathraea Squamaria* or toothwort.

The Hebrew word *luz*, translated "hazel" in the authorized version of the English Bible (Gen. xxx. 37), is believed to signify "almond" (see Kitto, *Cycl. of Bibl. Lit.* ii. 869, and iii. 811, 1864). A belief in the efficacy of divining-rods of hazel for the discovery of concealed objects is probably of remote origin (cf. Hosea iv. 12). G. Agricola, in his treatise *Vom Bergwerck* (pp. xxix.-xxxi., Basel, 1557), gives an account, accompanied by a woodcut, of their employment in searching for mineral veins. By certain persons, who for different metals used rods of various materials, rods of hazel, he says, were held serviceable simply for silver lodes, and by the skilled miner, who trusted to natural signs of mineral veins, they were regarded as of no avail at all. The virtue of the hazel wand was supposed to be dependent on its having two forks; these were to be grasped in the fists, with the fingers uppermost, but with moderate firmness only, lest the free motion of the opposite end downwards towards the looked-for object should be interfered with. According to Cornish tradition, the divining or dowsing rod is guided to lodes by the pixies, the guardians of the treasures of the earth. By Vallemont, who wrote towards the end of the 17th century, the divining-rod of hazel, or "baguette divinatoire," is described as instrumental in the pursuit of criminals. The Jesuit Vanière, who flourished in the early part of the 18th century, in the *Praedium rusticum* (pp. 12, 13, new ed., Toulouse, 1742) amusingly relates the manner in which he exposed the chicanery of one who pretended by the aid of a hazel divining-rod to point out hidden water-courses and gold. The burning of hazel nuts for the magical investigation of the future is alluded to by John Gay in *Thursday, or the Spell*, and by Burns in *Halloween*. The hazel is very frequently mentioned by the old French romance writers. *Corylus rostrata* and *C. americana* of North America have edible fruits like those of *C. Avellana*.

The witch hazel is quite a distinct plant, *Hamamelis virginica*, of the natural order Hamamalideae, the astringent bark of which is used in medicine. It is a hardy deciduous shrub, native of North America, which bears a profusion of rich yellow flowers in autumn and winter when the plant is leafless.

---

1 It has been supposed that the origin is to be found in O. Eng. *hæs*, a behest, connected with *hatan* = Ger. *heissen*, to

give orders: the hazel-wand was the sceptre of authority of the shepherd chieftain (ποιμὴν λαῶν) of olden times, see *Grimm, Gesch. d. deutsch. Sprache*, p. 1016, 1848. The root is *kas-*, cf. Lat. *corulas, corylus*; and the original meaning is unknown.

2 On the expression "hazel eyes," see *Notes and Queries*, 2nd ser. xii. 337, and 3rd ser. iii. 18, 39.

3 For derivations of the word see Latham's *Johnson's Dictionary*.

HAZLETON, a city of Luzerne county, Pennsylvania, U.S.A., about 25 m. S. of Wilkes-Barré. Pop. (1890) 11,872; (1900) 14,230, of whom 2732 were foreign-born; (1910 census) 25,452. It is served by the Lehigh Valley, the Pennsylvania (for freight), and the Wilkes-Barré & Hazleton (electric) railways. The city is built on a broad tableland on Nescopeck or Buck Mountain, a spur of the Blue Mountains, about 1620 ft. above sea-level. It has a park and a number of handsome residences; and its agreeable climate and picturesque situation make it attractive as a summer resort. The city has a public library. Hazleton is near the centre of one of the richest coal regions (the Lehigh or "Eastern Middle Coal Field") of the state, and its principal industry is the mining and shipping of anthracite coal. It has silk mills, knitting mills, shirt factories, breweries, macaroni factories, lumber and planing mills, important iron works, a casket factory and a large electric power plant. The value of the city's factory products increased from $998,823 in 1900 to $2,185,876 in 1905, or 118.8%, only three other cities in the state having a population of 8000 or more in 1900 showing a greater rate of increase. There is a state hospital here for the treatment of persons injured in mines. Hazleton was settled in 1820, was laid out in 1836, was incorporated as a borough in 1856 and received a city charter in 1891. The local coal industry dates from 1837.

HAZLITT, WILLIAM (1778-1830), British literary critic and essayist, was born on the 10th of April 1778 at Maidstone, where his father, William Hazlitt, was minister of a Unitarian congregation. The father took the side of the Americans in their struggle with the mother-country, and during a residence at Bandon, Co. Cork, interested himself in the welfare of some American prisoners at Kinsale. In 1783 he migrated with his family to America, but in the winter of 1786-1787 returned to England, and settled at Wem in Shropshire, where he ministered to a small congregation. There his son William went to school, till in 1793 he was sent to the Hackney theological college in the hope that he would become a dissenting minister. For this career, however, he had no inclination, and returned, probably in 1794, to Wem, where he led a desultory life until 1802, and then decided to become a portrait painter. His elder brother John was already established as a miniature painter in London. The monotony of life at Wem was broken in January 1798 by the visit of Samuel Taylor Coleridge to Shrewsbury, where young Hazlitt went to hear him preach. Coleridge encouraged William Hazlitt's interest in metaphysics, and in the spring of the next year Hazlitt visited Coleridge at Nether Stowey and made the acquaintance of William Wordsworth. The circumstances of this early intercourse with Coleridge are related with inimitable skill in a paper in Hazlitt's *Literary Remains* (1839). On visits to his brother in London he made many acquaintances, the most important being a friendship with Charles Lamb, said to have been founded on a remark of Lamb's interpolated in a discussion between Coleridge, Godwin and Holcroft, "Give me man as he is *not* to be." He also formed an acquaintance with John Stoddart, whose sister Sarah he married in 1808. In October 1802 he went to Paris to copy portraits in the Louvre, and spent four happy months in Paris. When he returned to London he undertook commissions for portraits, but soon found he was not likely to excel in his art; his last portrait, one of Charles Lamb as a Venetian senator (now in the National Portrait Gallery), was executed in 1805. In that year he published his first book, *An Essay on the Principles of Human Action: being an argument in favour of the Natural Disinterestedness of the Human Mind*, which had occupied him at intervals for six or seven years. It attracted little attention, but remained a favourite with its author. Other works belonging to this period are: *Free Thoughts on Public Affairs* (1806); *An Abridgment of the Light of Nature Revealed, by Abraham Tucker ...* (1807); *The Eloquence of the British Senate ...* (2 vols., 1807); *A Reply to Malthus, on his Essay on Population* (1807); *A New and Improved Grammar of the English Tongue ...* (1810).

Hazlitt married in 1808. His domestic life was unhappy. His wife was an unromantic, business-like woman, while he himself was fitful and moody, and impatient of restraint. The dissolution of the ill-assorted union was nevertheless deferred for fourteen years, during which much of Hazlitt's best literary work had been produced. Mrs Hazlitt had inherited a small estate at Winterslow near Salisbury, and here the Hazlitts lived until 1812, when they removed to 19 York Street, Westminster, a house that was once Milton's. Hazlitt delivered in 1812 a course of lectures at the Russell Institution on the *Rise and Progress of Modern Philosophy*. He soon abandoned philosophy, however, to give his whole attention to journalism. He was parliamentary reporter and subsequently dramatic critic for the *Morning Chronicle*; he also contributed to the *Champion* and *The Times*; but his closest connexion was with the *Examiner*, owned by John and Leigh Hunt. In conjunction with Leigh Hunt he undertook the series of articles called *The Round Table*, a collection of essays on literature, men and manners which were originally contributed to the *Examiner*. To this time belong his *View of the English Stage* (1818), and *Lectures on the English Poets* (1818), on the *English Comic Writers* (1819), and on the *Dramatic Literature of the Age of Elizabeth* (1821). By these works, together with his *Characters of Shakespeare's Plays* (1817), and his *Table Talk; or Original Essays on Men and Manners* (1821-1822), his reputation as a critic and essayist was established. Next to Coleridge, Hazlitt was perhaps the most powerful exponent of the dawning perception that Shakespeare's art was no less marvellous than his genius; and Hazlitt's criticism did not, like Coleridge's, remain in the condition of a series of brilliant but fitful glimpses of insight, but was elaborated with steady care. His lectures on the Elizabethan dramatists performed a similar service for the earlier, sweeter and simpler among them, such as Dekker, till then unduly eclipsed by later writers like Massinger, better playwrights but worse poets. Treating of the contemporary drama, he successfully vindicated for Edmund Kean, whose genius he recognized from the first, the high place which he has retained as an actor, and his enthusiasm for Mrs Siddons knew no bounds. His criticisms on the English comic writers and men of letters in general are masterpieces of ingenious and felicitous

exposition, though rarely, like Coleridge's, penetrating to the inmost core of the subject. Moreover, at the time when the lectures were written, Hazlitt's views, orthodox as they may seem now, were novel enough.

As an essayist Hazlitt is even more effective than as a critic. Being enabled to select his own subjects, he escapes dependence upon others either for his matter or his illustrations, and presents himself by turns as a metaphysician, a moralist, a humorist, a painter of manners and characteristics, but always, whatever his ostensible theme, deriving the essence of his commentary from himself. This combination of intense subjectivity with strict adherence to his subject is one of Hazlitt's most distinctive and creditable traits. Intellectual truthfulness is a passion with him. He steeps his topic in the hues of his own individuality, but never uses it as a means of self-display. The first reception of his admirable essays was by no means in accordance with their deserts. Hazlitt's political sympathies and antipathies were vehement, and he had taken the unfashionable side. *The Quarterly Review* attacked him with deliberate malignity, stopped the sale of his writings for a time and blighted his credit with publishers. Hazlitt retaliated by his *Letter to William Gifford* (1819), accusing the editor of deliberate misrepresentation. In downright abuse and hard-hitting, Hazlitt proved himself more than a match even for Gifford. By the writers in *Blackwood's Magazine* Hazlitt was also scurrilously treated.[1] He had become estranged from his early friends, the Lake poets, by what he uncharitably but not unnaturally regarded as their political apostasy; and he had no scruples about recording his often very unfavourable opinions of his contemporaries. He displayed, moreover, an exasperating facility in grounding his criticisms on facts that his victims were unable to deny. His inequalities of temper separated him for a time even from Leigh Hunt and Charles Lamb, and on the whole the period of his most brilliant literary success was that when he was most soured and broken. Domestic troubles supervened; he had gone to live in Southampton Buildings in September 1819, and his marriage, long little more than nominal, was dissolved in consequence of the infatuated passion he had conceived for his landlord's daughter, Sarah Walker, a most ordinary person in the eyes of every one else. It is impossible to regard Hazlitt as a responsible agent while he continued subject to this influence. His own record of the transaction, published by himself under the title of *Liber Amoris, or the New Pygmalion* (1823), is an unpleasant but remarkable psychological document. It consists of conversations between Hazlitt and Sarah Walker, drawn up in the spring of 1822, of a correspondence between Hazlitt and his friend P. G. Patmore between March and July, and an account of the rupture of his relations with Sarah. The business-like dissolution of his marriage under the law of Scotland is related with amazing naïveté by the family biographer. Rid of his wife and cured of his mistress, he shortly afterwards astonished his friends by marrying a widow. "All I know," says his grandson, "is that Mrs Bridgewater became Mrs Hazlitt." They travelled on the continent for a year and then parted finally. Hazlitt's study of the Italian masters during this tour, described in a series of letters contributed to the *Morning Chronicle*, had a deep effect upon him, and perhaps conduced to that intimacy with the cynical old painter Northcote which, shortly after his return, engendered a curious but eminently readable volume of *The Conversations of James Northcote, R.A.* (1830). The respective shares of author and artist are not always easy to determine. During the recent agitations of his life he had been writing essays, collected in 1826 under the title of *The Plain Speaker: opinions on Books, Men and Things* (1826). *The Spirit of the Age; or Contemporary Portraits* (1825), a series of criticisms on the leading intellectual characters of the day, is in point of style perhaps the most splendid and copious of his compositions. It is eager and animated to impetuosity, though without any trace of carelessness or disorder. He now undertook a work which was to have crowned his literary reputation, but which can hardly be said to have even enhanced it—*The Life of Napoleon Buonaparte* (4 vols., 1828-1830). The undertaking was at best premature, and was inevitably disfigured by partiality to Napoleon as the representative of the popular cause, excusable in a Liberal politician writing in the days of the Holy Alliance. Owing to the failure of his publishers Hazlitt received no recompense for this laborious work. Pecuniary anxieties and disappointments may have contributed to hasten his death, which took place on the 18th of September 1830. Charles Lamb was with him to the last.

Hazlitt had many serious defects of temper. His consistency was gained at the expense of refusing to revise his early impressions and prejudices. His estimate of a man's work was too apt to be decided by sympathy or the reverse with his politics. For Scott, however, he had a great admiration, although they were far enough apart in politics. He was a compound of intellect and passion, and the refinement of his critical analysis is associated with vehement eloquence and glowing imagery. He was essentially a critic, a dissector and, as Bulwer justly remarks, a much better judge of men of thought than of men of action. The paradoxes with which his works abound never spring from affectation; they are in general the sallies of a mind so agile and ardent as to overrun its own goal. His style is perfectly natural, and yet admirably calculated for effect. His diction, always rich and masculine, seems to kindle as he proceeds; and when thoroughly animated by his subject, he advances with a succession of energetic, hard-hitting sentences, each carrying his argument a step further, like a champion dealing out blows as he presses upon the enemy. Although, however, his grasp upon his subject is strenuous, his insight into it is rarely profound. He can amply satisfy men of taste and culture; he cannot, like Coleridge or Burke, dissatisfy them with themselves by showing them how much they would have missed without him. He is a critic who exhibits, rather than reveals, the beauties of an author. But all shortcomings are forgotten in the genuineness and fervour of the writer's self-portraiture. The intensity of his personal convictions causes all he wrote to appear in a manner autobiographic. Other men have been said to speak like books, Hazlitt's books speak like men. To read his works in connexion with Leigh Hunt's and Charles Lamb's is to be introduced into one of the most attractive of English literary circles, and this alone will long preserve them from oblivion.

His son, William Hazlitt (1811-1893), was born on the 26th of September 1811. The separation between his parents did not prevent him from being on affectionate terms with both of them. He early began to write for the *Morning Chronicle*, and in 1833 married Caroline Reynell. He was the author of many translations, chiefly from the French, and of some works on the law of bankruptcy. He was called to the bar at the Middle Temple in 1844, and became registrar in the court of bankruptcy. He held this position for more than thirty years, retiring two years before his death, which took place at Addlestone, Surrey, on the 23rd of February 1893.

Hazlitt's grandson, William Carew Hazlitt, the bibliographer, was born on the 22nd of August 1834. He was educated at the Merchant Taylors' school and was called to the bar of the Inner Temple in 1861. Among his many publications may be noted his invaluable *Handbook to the Popular, Poetical and Dramatic Literature of Great Britain, from the Invention of Printing to the Restoration* (1867), supplemented in 1876, 1882, 1887 and 1889, a *General Index* by J. G. Gray appearing in 1893. He published further contributions to the subject in *Bibliographical Collections and Notes on Early English Literature made during the years 1893-1903* (1903), and a *Manual for the Collector and Amateur of Old English Plays ...* (1892). He was the chief editor of the useful 1871 edition of Warton's *History of English Poetry*, and compiled the *Catalogue of the Huth Library* (1880).

The list of the first William Hazlitt's works also includes: *Political Essays, with Sketches of Public Characters* (1819); *Sketches of the Principal Picture Galleries in England ...* (1824); *Characteristics; in the Manner of Rochefoucauld's Maxims* (1823); *Select Poets of Great Britain: to which are prefixed Critical Notices of each Author* (1825); *Notes of a Journey through France and Italy ...* (1826); *The Life of Titian; with Anecdotes of the Distinguished Persons of his Time* (1830), nominally by James Northcote; an article on the "Fine Arts" contributed to the seventh edition of the *Encyclopaedia Britannica*; and posthumous collections made by his son.

A comprehensive edition of *The Collected Works of William Hazlitt* (12 vols., 1902-1904) does not include the life of Napoleon. It contains an introduction by W. E. Henley, and was issued under the superintendence of A. R. Waller and Arnold Glover, and there are many modern reprints of isolated works. The most copious source of information respecting Hazlitt is the *Memoirs of William Hazlitt, with Portions of his Correspondence* (2 vols., 1867), by his grandson, W. C. Hazlitt, a medley rather than a memoir, yet full of interest. A slight but appropriate sketch had previously been prefixed by his son to his *Literary Remains ...* (2 vols., 1836), accompanied by estimates of his intellectual character by Bulwer and by Talfourd, who had been his fast friend. There is an excellent monograph on *William Hazlitt* (1902) by Mr Augustine Birrell, in the "English Men of Letters" series, and one in French by J. Donady (Paris, 1907), who also published a bibliography of his works. Valuable biographical particulars have been preserved in Barry Cornwall's memoirs of Lamb; in the *My Friends and Acquaintances* (1854) of Mr P. G. Patmore, Hazlitt's most intimate associate in his later years; in Crabb Robinson's *Diary*, and in Lamb's correspondence. A full bibliographical list of his writings, with a collection of the most remarkable critical judgments upon them from all quarters, was prepared by Alexander Ireland (1868). Further information on the Hazlitt family is to be found in Mr W. C. Hazlitt's *Four Generations of a Literary Family* (2 vols., 1897). The chief interest of this desultory book is the considerable extracts from the diary of Margaret [Peggy] Hazlitt, which describes the Hazlitt experiences in America. See also "William Hazlitt" in Sir L. Stephen's *Hours in a Library* (ed. 1892, vol. ii.), and *Lamb and Hazlitt, further Letters and Records hitherto unpublished* (1900), by W. C. Hazlitt.

1 For some quotations see Alexander Ireland's bibliography.

HEAD, SIR EDMUND WALKER, BART. (1805-1868), English colonial governor and writer on art, was the son of the Rev. Sir John Head, Bart., rector of Rayleigh, Essex. He was educated at Winchester school and Oriel College, Oxford, and taking his degree with first-class honours in classics, he became fellow of Merton College. On his father's death in 1838, he succeeded to the baronetcy as 8th baronet. His services as poor-law commissioner, to which post he was appointed in 1841 after five years as assistant-commissioner, procured for him in 1847 the office of lieutenant-governor of New Brunswick, whence he passed in 1854 to the governor-generalship of Canada, which he retained till 1861. The following year, having returned to England, Head was nominated a civil service commissioner. In 1857 he was sworn of the Privy Council, and in 1860 was decorated as K.C.B., while in the course of his career he received the degrees of D.C.L. at Oxford and LL.D. at Cambridge. He died in London on the 28th of January 1868, the baronetcy becoming extinct, as his only son had died in 1859.

Sir Edmund Head wrote the article "Painting" in the *Penny Cyclopaedia*; *A Handbook of the Spanish and French Schools of Painting* (1845); *Shall and Will, or two Chapters on Future Auxiliary Verbs* (1856); and *Ballads and other Poems, Original and Translated* (1868). He also edited F. T. Kugler's *Handbook of Painting of the German, Flemish, Dutch, Spanish, and French Schools* (1854) and the *Essays on the Administrations of Great Britain* (1864), written by his lifelong friend, Sir George Cornewall Lewis. His translation from the Icelandic of *Viga Glum's Saga* appeared in 1866.

HEAD, SIR FRANCIS BOND, BART. (1793-1875), English soldier, traveller and author, son of James Roper Head of the Hermitage, Higham, Kent, was born there on the 1st of January 1793. He was educated at Rochester grammar school and the Royal Military Academy, whence in 1811 he was commissioned to the Royal Engineers. He was for some years stationed in the Mediterranean, and he served in the campaign of 1815, being present at the battle of Waterloo. He went on half-pay in 1825, when he accepted the charge of an association formed to work the gold and silver mines of Rio de La Plata. In connexion with this enterprise he made several rapid journeys across the Pampas and among the Andes, his *Rough Notes* of which, published in 1826, and written in a clear and spirited style, obtained for him the name of "Galloping Head." On his return in 1827, he became involved in a controversy with the directors of his company, and in defence of his conduct he published *Reports of the La Plata Mining Association* (London, 1827). He was soon afterwards restored to the active list of the army as a major unattached, mainly owing to his efforts to introduce the South American lasso into the British service for auxiliary draught. In 1830 he published a life of Bruce, the African traveller, and in 1834 *Bubbles from the Brunnens of Nassau, by an Old Man*. In 1835 he was knighted, and in the following year created a baronet. In 1835 he was appointed lieutenant-governor of Upper Canada, and in this capacity he had to deal with a political situation of great difficulty, being called upon in 1837 to suppress a serious insurrection. Shortly afterwards, in consequence of a dispute with the home government, he resigned his post and returned to England, via New York (see *Quarterly Review*, vols. 63-64). Thereafter he devoted himself to writing, chiefly for the *Quarterly Review*, and to hunting. He rode to hounds until he was seventy-five. In 1869 Sir Francis Head was made a privy councillor. He died on the 20th of July 1875, at Duppas Hall, Croydon.

Head was the author of a considerable number of works, chiefly of travel, written in a clever, amusing and graphic fashion, and displaying both acute observation and genial humour. His principal works, beside those mentioned above, and a narrative of his Canadian administration (1839), were *The Emigrant* (1846); *Highways and Dryways, the Britannia and Conway Tubular Bridges* (1849); *Stokers and Pokers*, a sketch of the working of a railway line (1849); *The Defenceless State of Great Britain* (1850); *A Faggot of French Sticks* (1852); *A Fortnight in Ireland* (1852); *Descriptive Essays* (1856); comments on Kinglake's *Crimean War* (1853); *The Horse and his*

Rider (1860); *The Royal Engineer* (1870); and a sketch of the life of Sir John Burgoyne (1872).

His brother, Sir George Head (1782-1855), was educated at the Charterhouse. In 1808 he received an appointment in the commissariat of the British army in the Peninsula, where he was a witness of many exciting scenes and important battles, of which he gave an interesting account in "Memoirs of an Assistant Commissary-General" attached to the second volume of his *Home Tour*, published in 1837. In 1814 he was sent to America to take charge of the commissariat in a naval establishment on the Canadian lakes, and he subsequently held appointments at Halifax and Nova Scotia. Some of his Canadian experiences were narrated by him in *Forest Scenery and Incidents in the Wilds of North America* (1829). In 1831 he was knighted.

He published in 1835 *A Home Tour through the Manufacturing Districts of England*, and in 1837 a sequel to it, entitled *A Home Tour through various parts of the United Kingdom*. Both works are amusing and instructive, but his *Rome, a Tour of many Days*, published in 1849, is somewhat dull and tedious. He also translated *Historical Memoirs of Cardinal Pacca* (1850), and the *Metamorphoses of Apuleius* (1851).

HEAD (in O. Eng. *héafod*; the word is common to Teutonic languages; cf. Dutch *hoofd*, Ger. *Haupt*, generally taken to be in origin connected with Lat. *caput*, Gr. κεφαλή), the upper portion of the body in man, consisting of the skull with its integuments and contents, &c., connected with the trunk by the neck (see Anatomy, Skull and Brain); also the anterior or fore part of other animals. The word is used in a large number of transferred and figurative senses, generally with reference to the position of the head as the uppermost part, hence the leading, chief portion of anything.

HEAD-HUNTING, or Head-Snapping, as the Dutch call it, a custom once prevalent among all Malay races and surviving even to-day among the Dyaks (*q.v.*) of Borneo and elsewhere. Martin de Rada, provincial of the Augustinians, reported its existence in Luzon (Philippine Islands) as early as 1577. The practice is believed to have had its origin in religious motives, the worship of skulls being universal among the Malays. Severe repressive measures have led to its decrease. Among the Igorrotes all that remains is the dance, accompanied by singing, around the bare pole on which the head was formerly fixed. With the Ilongotes a bridegroom must bring his bride a number of heads, those of Christians being preferred. The chief examples of head-hunters are the Was, a hill-tribe on the north-eastern frontier of India, and the Nagas and Kukis of Assam.

See Bock, *Headhunters of Borneo* (1881); W. H. Furness, *Home Life of Borneo Head-hunters* (Philadelphia, 1902); T. C. Hodson, "Head-hunting in Assam," in *Folk-Lore*, xx. 2. 132.

HEALTH, a condition of physical soundness or well-being, in which an organism discharges its functions efficiently; also in a transferred sense a state of moral or intellectual well-being (see Hygiene, Therapeutics and Public Health). "Health" represents the O. Eng. *hælth*, the condition or state of being *hál*, safe or sound. This word took in northern dialects the form "hale," in southern or midland English *hole*, hence "whole," with the addition of an initial *w*, as in "whoop," and in the pronunciation of "one." "Hail," properly an exclamation of greeting, good health to you, hence, to greet, to call out to, is directly Scandinavian in origin, from Old Norwegian *heill*, cognate with the O. Eng. *hál*, used also in this sense. "To heal" (O. Eng. *hælan*), to make in sound health, to cure, is also cognate.

Drinking of Healths.—The custom of drinking "health" to the living is most probably derived from the ancient religious rite of drinking to the gods and the dead. The Greeks and Romans at meals poured out libations to their gods, and at ceremonial banquets drank to them and to the dead. The Norsemen drank the "minni" of Thor, Odin and Freya, and of their kings at their funeral feasts. With the advent of Christianity the pagan custom survived among the Scandinavian and Teutonic peoples. Such festal formulae as "God's minne!" "A bowl to God in Heaven!" occur, and Christ, the Virgin and the Saints were invoked, instead of heathen gods and heroes. The Norse "minne" was at once love, memory and thought of the absent one, and it survived in medieval and later England in the "minnying" or "mynde" days, on which the memory of the dead was celebrated by services and feasting. Intimately associated with these quasi-sacrificial drinking customs must have ever been the drinking to the health of living men. The Greeks drank to one another and the Romans adopted the custom. The Goths pledged each other with the cry "Hails!" a greeting which had its counterpart in the Anglo-Saxon "waes hael" (see Wassail). Most modern drinking-usages have had their equivalents in classic times. Thus the Greek practice of drinking to the Nine Muses as three times three survives to-day in England and elsewhere. The Roman gallants drank as many glasses to their mistresses as there were letters in each one's name. Thus Martial:

"Six cups to Naevia's health go quickly round,
And be with seven the fair Justina's crown'd."

The English drinking phrase—a "toast," to "toast" anyone—not older than the 17th century, had reference at first to this custom of drinking to the ladies. A toast was at first invariably a woman, and the origin of the phrase is curious. In Stuart days there appears to have been a time-honoured custom of putting a piece of toast in the wine-cup before drinking, from a fanciful notion that it gave the liquor a better flavour. In the *Tatler* No. 24 the connexion between this sippet of toast and the fair one pledged is explained as follows: "It happened that on a

publick day" (speaking of Bath in Charles II.'s reign) "a celebrated beauty of those times was in the cross bath, and one of the crowd of her admirers took a glass of the water in which the fair one stood, and drank her health to the company. There was in the place a gay fellow, half fuddled, who offered to jump in, and swore, though he liked not the liquor, he would have the toast. He was opposed in his resolution; yet this whim gave foundation to the present honour which is done to the lady we mention in our liquor, who has ever since been called a toast." Skeat adds (*Etym. Dict.*, 1908), "whether the story be true or not, it may be seen that a 'toast,' *i.e.* a health, easily took its name from being the usual accompaniment to liquor, especially in loving cups," &c.

Health drinking had by the beginning of the 17th century become a very ceremonious business in England. At Christmas 1623 the members of the Middle Temple, according to one of the Harleian MSS. quoted in *The Life of Sir Simonds D'Ewes*, drank to the health of the princess Elizabeth, who, with her husband the king of Bohemia, was then suffering great misfortunes, and stood up, one after the other, cup in one hand, sword in the other, and pledged her, swearing to die in her service. Toasts were often drunk solemnly on bended knees; according to one authority, Samuel Ward of Ipswich, in his *Woe to Drunkards* (1622), on bare knees. In 1668 at Sir George Carteret's at Cranbourne the health of the duke of York was drunk by all in turn, each on his knees, the king, who was a guest, doing the like. A Scotch custom, still surviving, was to drink a toast with one foot on the table and one on the chair. Healths, too, were drunk in a definite order. Braithwaite says: "These cups proceed either in order or out of order. In order when no person transgresseth or drinkes out of course, but the cup goes round according to their manner of sitting: and this we call a health-cup, because in our wishing or confirming of any one's health, bare headed and standing, it is performed by all the company" (*Laws of Drinking*, 1617). Francis Douce's MSS. notes say: "It was the custom in Beaumont and Fletcher's time for the young gallants to stab themselves in the arms or elsewhere, in order to drink the health of their mistresses." Pepys, in his *Diary* for the 19th of June 1663, writes: "To the Rhenish wine house, where Mr Moore showed us the French manner when a health is drunk, to bow to him that drunk to you, and then apply yourself to him, whose lady's health is drunk, and then to the person that you drink to, which I never knew before; but it seems it is now the fashion." A Frenchman visiting England in Charles II.'s time speaks of the custom of drinking but half your cup, which is then filled up again and presented to him or her to whose health you drank. England's divided loyalty in the 18th century bequeathed to modern times a custom which possibly yet survives. At dinners to royalties, until the accession of Edward VII., finger-glasses were not placed on the table, because in early Georgian days those who were secretly Jacobites passed their wine-glasses over the finger-bowls before drinking the loyal toasts, in allusion to the royal exiles "over the water," thus salving their consciences. Lord Cockburn (1779-1854), in his *Memorials of his Time* (1856), states that in his day the drinking of toasts had become a perfect social tyranny; "every glass during dinner had to be dedicated to some one. It was thought sottish and rude to take wine without this, as if forsooth there was nobody present worth drinking with. I was present about 1803 when the late duke of Buccleuch took a glass of sherry by himself at the table of Charles Hope, then lord advocate, and this was noticed afterwards as a piece of direct contempt." In Germany to-day it is an insult to refuse to drink with any one; and at one time in the west of America a man took his life in his hands by declining to pledge another. All this is a survival of that very early and universal belief that drinking to one another was a proof of fair play, whether it be in a simple bargain or in matters of life and death. The ceremony surrounding the Loving Cup to-day is reminiscent of the perils of those times when every man's hand was raised against his fellow. This cup, known at the universities as the Grace Cup, was originated, says Miss Strickland in her *Lives of the Queens of Scotland*, by Margaret Atheling, wife of Malcolm Canmore, who, in order to induce the Scots to remain at table for grace had a cup of the choicest wine handed round immediately after it had been said. The modern "loving cup" sometimes has a cover, and in this case each guest rises and bows to his immediate neighbour on the right, who, also rising, removes and holds the cover with his right hand while the other drinks; the little comedy is a survival of the days when he who drank was glad to have the assurance that the right or dagger hand of his neighbour was occupied in holding the lid of the chalice. When there is no cover it is a common custom for both the left- and the right-hand neighbour to rise while the loving cup is drunk, with the similar object of protecting the drinker from attack. The Stirrup Cup is probably the Roman *poculum boni genii*, the last glass drunk at the banquet to a general "good night."

See Chambers, *Book of Days*; Valpy, *History of Toasting* (1881); F. W. Hackwood, *Inns, Ales, and Drinking Customs* (London, 1909).

HEALY, GEORGE PETER ALEXANDER (1808-1894), American painter, was born in Boston, Massachusetts, on the 15th of July 1808. Going to Europe in 1835 Healy studied under Baron Gros in Paris and in Rome. He received a third-class medal in Paris in 1840, and one of the second class in 1855, when he exhibited his "Franklin urging the claims of the American Colonies before Louis XVI." Among his portraits of eminent men are those of Webster, Clay, Calhoun, Guyot, Seward, Louis Philippe, and the presidents of the United States from John Quincy Adams to Grant—this series being painted for the Corcoran Gallery, Washington. His large group, "Webster replying to Hayne," containing 150 portraits, is in Faneuil Hall, Boston, Mass. He was one of the most prolific and popular painters of his day. He died in Chicago, Illinois, on the 24th of June 1894.

HEANOR, an urban district in the Ilkeston parliamentary division of Derbyshire, England, 10 m. N.W. of Nottingham, on the Great Northern and Midland railways. Pop. (1901) 16,249. Large hosiery works employ many of the inhabitants, and collieries are worked in the parish. The urban district includes Codnor-cum-Loscoe. Shipley Hall, to the south of Heanor, is a mansion built on a hill, amidst fine gardens. The ruin of the ancient moated castle of Codnor stands, overlooking the vale of the Erewash, on land which was once Codnor Park, and is now the site of large ironworks.

Updated editions will replace the previous one—the old editions will be renamed.

Creating the works from print editions not protected by U.S. copyright law means that no one owns a United States copyright in these works, so the Foundation (and you!) can copy and distribute it in the United States without permission and without paying copyright royalties. Special rules, set forth in the General Terms of Use part of this license, apply to copying and distributing Project Gutenberg™ electronic works to protect the PROJECT GUTENBERG™ concept and trademark. Project Gutenberg is a registered trademark, and may not be used if you charge for an eBook, except by following the terms of the trademark license, including paying royalties for use of the Project Gutenberg trademark. If you do not charge anything for copies of this eBook, complying with the trademark license is very easy. You may use this eBook for nearly any purpose such as creation of derivative works, reports, performances and research. Project Gutenberg eBooks may be modified and printed and given away—you may do practically ANYTHING in the United States with eBooks not protected by U.S. copyright law. Redistribution is subject to the trademark license, especially commercial redistribution.

1.E.5. Do not copy, display, perform, distribute or redistribute this electronic work, or any part of this electronic work, without prominently displaying the sentence set forth in paragraph 1.E.1 with active links or immediate access to the full terms of the Project Gutenberg™ License.

1.E.6. You may convert to and distribute this work in any binary, compressed, marked up, nonproprietary or proprietary form, including any word processing or hypertext form. However, if you provide access to or distribute copies of a Project Gutenberg™ work in a format other than “Plain Vanilla ASCII” or other format used in the official version posted on the official Project Gutenberg™ website (www.gutenberg.org), you must, at no additional cost, fee or expense to the user, provide a copy, a means of exporting a copy, or a means of obtaining a copy upon request, of the work in its original “Plain Vanilla ASCII” or other form. Any alternate format must include the full Project Gutenberg™ License as specified in paragraph 1.E.1.

1.E.7. Do not charge a fee for access to, viewing, displaying, performing, copying or distributing any Project Gutenberg™ works unless you comply with paragraph 1.E.8 or 1.E.9.

1.E.8. You may charge a reasonable fee for copies of or providing access to or distributing Project Gutenberg™ electronic works provided that:

- You pay a royalty fee of 20% of the gross profits you derive from the use of Project Gutenberg™ works calculated using the method you already use to calculate your applicable taxes. The fee is owed to the owner of the Project Gutenberg™ trademark, but he has agreed to donate royalties under this paragraph to the Project Gutenberg Literary Archive Foundation. Royalty payments must be paid within 60 days following each date on which you prepare (or are legally required to prepare) your periodic tax returns. Royalty payments should be clearly marked as such and sent to the Project Gutenberg Literary Archive Foundation at the address specified in Section 4, “Information about donations to the Project Gutenberg Literary Archive Foundation.”

- You provide a full refund of any money paid by a user who notifies you in writing (or by e-mail) within 30 days of receipt that s/he does not agree to the terms of the full Project Gutenberg™ License. You must require such a user to return or destroy all copies of the works possessed in a physical medium and discontinue all use of and all access to other copies of Project Gutenberg™ works.

- You provide, in accordance with paragraph 1.F.3, a full refund of any money paid for a work or a replacement copy, if a defect in the electronic work is discovered and reported to you within 90 days of receipt of the work.

- You comply with all other terms of this agreement for free distribution of Project Gutenberg™ works.

1.E.9. If you wish to charge a fee or distribute a Project Gutenberg™ electronic work or group of works on different terms than are set forth in this agreement, you must obtain permission in writing from the Project Gutenberg Literary Archive Foundation, the manager of the Project Gutenberg™ trademark. Contact the Foundation as set forth in Section 3 below.

1.F.

1.F.1. Project Gutenberg volunteers and employees expend considerable effort to identify, do copyright research on, transcribe and proofread works not protected by U.S. copyright law in creating the Project Gutenberg™ collection. Despite these efforts, Project Gutenberg™ electronic works, and the medium on which they may be stored, may contain “Defects,” such as, but not limited to, incomplete, inaccurate or corrupt data, transcription errors, a copyright or other intellectual property infringement, a defective or damaged disk or other medium, a computer virus, or computer codes that damage or cannot be read by your equipment.

1.F.2. LIMITED WARRANTY, DISCLAIMER OF DAMAGES - Except for the “Right of Replacement or Refund” described in paragraph 1.F.3, the Project Gutenberg Literary Archive Foundation, the owner of the Project Gutenberg™ trademark, and any other party distributing a Project Gutenberg™ electronic work under this agreement, disclaim all liability to you for damages, costs and expenses, including legal fees. YOU AGREE THAT YOU HAVE NO REMEDIES FOR NEGLIGENCE, STRICT LIABILITY, BREACH OF WARRANTY OR BREACH OF CONTRACT EXCEPT THOSE PROVIDED IN PARAGRAPH 1.F.3. YOU AGREE THAT THE FOUNDATION, THE TRADEMARK OWNER, AND ANY DISTRIBUTOR UNDER THIS AGREEMENT WILL NOT BE LIABLE TO YOU FOR ACTUAL, DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE OR INCIDENTAL DAMAGES EVEN IF YOU GIVE NOTICE OF THE POSSIBILITY OF SUCH DAMAGE.

1.F.3. LIMITED RIGHT OF REPLACEMENT OR REFUND - If you discover a defect in this electronic work within 90 days of receiving it, you can receive a refund of the money (if any) you paid for it by sending a written explanation to the person you received the work from. If you received the work on a physical medium, you must return the medium with your written explanation. The person or entity that provided you with the defective work may elect to provide a replacement copy in lieu of a refund. If you received the work electronically, the person or entity providing it to you may choose to give you a second opportunity to receive the work electronically in lieu of a refund. If the second copy is also defective, you may demand a refund in writing without further opportunities to fix the problem.

1.F.4. Except for the limited right of replacement or refund set forth in paragraph 1.F.3, this work is provided to you ‘AS-IS’, WITH NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE.

1.F.5. Some states do not allow disclaimers of certain implied warranties or the exclusion or limitation of certain types of damages. If any disclaimer or limitation set forth in this agreement violates the law of the state applicable to this agreement, the agreement shall be interpreted to make the maximum disclaimer or limitation permitted by the applicable state law. The invalidity or unenforceability of any provision of this agreement shall not void the remaining provisions.

1.F.6. INDEMNITY - You agree to indemnify and hold the Foundation, the trademark owner, any agent or employee of the Foundation, anyone providing copies of Project Gutenberg™ electronic works in accordance with this agreement, and any volunteers associated with the production, promotion and distribution of Project Gutenberg™ electronic works, harmless from all liability, costs and expenses, including legal fees, that arise directly or indirectly from any of the following which you do or cause to occur: (a) distribution of this or any Project Gutenberg™ work, (b) alteration, modification, or additions or deletions to any Project Gutenberg™ work, and (c) any Defect you cause.

Section 2. Information about the Mission of Project Gutenberg™

Project Gutenberg™ is synonymous with the free distribution of electronic works in formats readable by the widest variety of computers including obsolete, old, middle-aged and new computers. It exists because of the

efforts of hundreds of volunteers and donations from people in all walks of life.

Volunteers and financial support to provide volunteers with the assistance they need are critical to reaching Project Gutenberg™'s goals and ensuring that the Project Gutenberg™ collection will remain freely available for generations to come. In 2001, the Project Gutenberg Literary Archive Foundation was created to provide a secure and permanent future for Project Gutenberg™ and future generations. To learn more about the Project Gutenberg Literary Archive Foundation and how your efforts and donations can help, see Sections 3 and 4 and the Foundation information page at www.gutenberg.org.

Section 3. Information about the Project Gutenberg Literary Archive Foundation

The Project Gutenberg Literary Archive Foundation is a non-profit 501(c)(3) educational corporation organized under the laws of the state of Mississippi and granted tax exempt status by the Internal Revenue Service. The Foundation's EIN or federal tax identification number is 64-6221541. Contributions to the Project Gutenberg Literary Archive Foundation are tax deductible to the full extent permitted by U.S. federal laws and your state's laws.

The Foundation's business office is located at 809 North 1500 West, Salt Lake City, UT 84116, (801) 596-1887. Email contact links and up to date contact information can be found at the Foundation's website and official page at www.gutenberg.org/contact

Section 4. Information about Donations to the Project Gutenberg Literary Archive Foundation

Project Gutenberg™ depends upon and cannot survive without widespread public support and donations to carry out its mission of increasing the number of public domain and licensed works that can be freely distributed in machine-readable form accessible by the widest array of equipment including outdated equipment. Many small donations ($1 to $5,000) are particularly important to maintaining tax exempt status with the IRS.

The Foundation is committed to complying with the laws regulating charities and charitable donations in all 50 states of the United States. Compliance requirements are not uniform and it takes a considerable effort, much paperwork and many fees to meet and keep up with these requirements. We do not solicit donations in locations where we have not received written confirmation of compliance. To SEND DONATIONS or determine the status of compliance for any particular state visit www.gutenberg.org/donate.

While we cannot and do not solicit contributions from states where we have not met the solicitation requirements, we know of no prohibition against accepting unsolicited donations from donors in such states who approach us with offers to donate.

International donations are gratefully accepted, but we cannot make any statements concerning tax treatment of donations received from outside the United States. U.S. laws alone swamp our small staff.

Please check the Project Gutenberg web pages for current donation methods and addresses. Donations are accepted in a number of other ways including checks, online payments and credit card donations. To donate, please visit: www.gutenberg.org/donate

Section 5. General Information About Project Gutenberg™ electronic works

Professor Michael S. Hart was the originator of the Project Gutenberg™ concept of a library of electronic works that could be freely shared with anyone. For forty years, he produced and distributed Project Gutenberg™ eBooks with only a loose network of volunteer support.

Project Gutenberg™ eBooks are often created from several printed editions, all of which are confirmed as not protected by copyright in the U.S. unless a copyright notice is included. Thus, we do not necessarily keep eBooks in compliance with any particular paper edition.

Most people start at our website which has the main PG search facility: www.gutenberg.org.

This website includes information about Project Gutenberg™, including how to make donations to the Project Gutenberg Literary Archive Foundation, how to help produce our new eBooks, and how to subscribe to our email newsletter to hear about new eBooks.